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Targets for Marine Corps Purchasing and Supply Management Initiatives

Spend Analysis Findings

Nancy Y. Moore, Clifford A. Grammich,
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Prepared for the United States Marine Corps

Approved for public release; distribution unlimited



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Preface

A growing body of research is documenting how innovative commercial firms are better managing their suppliers, supply base, and supply chain and applying a number of best purchasing and supply management (PSM) practices. These firms report that these practices have helped them improve performance, reduce total costs, and limit risks to operations. Recognizing the applicability of these practices to some of its own supply and logistics practices, the United States Marine Corps (USMC) is undertaking efforts to improve its purchasing and supply chain management.

A key part of identifying PSM-related supply chain improvement opportunities is conducting a spend analysis. This documented briefing presents the results of an analysis of contract transaction data in support of ongoing Marine Corps strategic sourcing efforts. The document also provides new insights into Marine Corps expenditures for goods and services, overall direct spending, and comparison spending with that in other military services.

This research should be of interest to all persons involved in improving purchasing and supply management for the Marine Corps. While focusing specifically on the Marine Corps, this document relies on the format, methodology, and some content of earlier spend analyses prepared for the Air Force and Army.

RAND conducted and documented this research in 2006. Since then, the Marine Corps has implemented some of the recommendations regarding analyses of its spend data. The overall study results, nevertheless, demonstrate both how the services may wish to assess its direct and indirect spend data, especially data for indirect purchases made on its behalf.

Similar work has been documented in the following RAND Corporation publications:

- *The F100 Engine Purchasing and Supply Chain Management Demonstration: Findings from Air Force Spend Analyses*, by Mary E. Chenoweth and Clifford A. Grammich (MG-424-AF, 2006).
- *Implementing Purchasing and Supply Chain Management: Best Practices in Market Research*, by Nancy Nicosia and Nancy Y. Moore (MG-473-AF, 2006).
- *Using a Spend Analysis to Help Identify Prospective Air Force Purchasing and Supply Management Initiatives: Summary of Selected Findings*, by Nancy Y. Moore, Cynthia R. Cook, Clifford A. Grammich, and Charles Lindenblatt (DB-434-AF, 2004).

- *Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms*, by Nancy Y. Moore, Laura H. Baldwin, Frank Camm, and Cynthia R. Cook (DB-334-AF, June 2002. Web only:
http://www.rand.org/pubs/documented_briefings/DB334/).

This research was sponsored by the Marine Corps Deputy Commandant for Installations and Logistics and conducted within the Forces and Resources Policy Center of the RAND National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community.

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Contents

Preface	iii
Summary	vii
Acknowledgments	xv
Abbreviations	xvii
 CHAPTER ONE	
Introduction	1
 CHAPTER TWO	
Overview of a Spend Analysis	7
 CHAPTER THREE	
General Opportunities for Improving Direct Purchasing Practices	25
 CHAPTER FOUR	
Insights on Direct Purchases by Specific Commodities and Suppliers	59
 CHAPTER FIVE	
DLA Spending on Behalf of the Marine Corps	81
 CHAPTER SIX	
Lessons for the Marine Corps	123
 APPENDIX	
DD350 and ACF Data and Analysis Issues	135
 Bibliography	141

Summary

Like the other military services, the U.S. Marine Corps must execute an increasingly broad array of tasks. In conducting these operations, it has had to embrace new operational and support concepts and to make the most of existing resources.

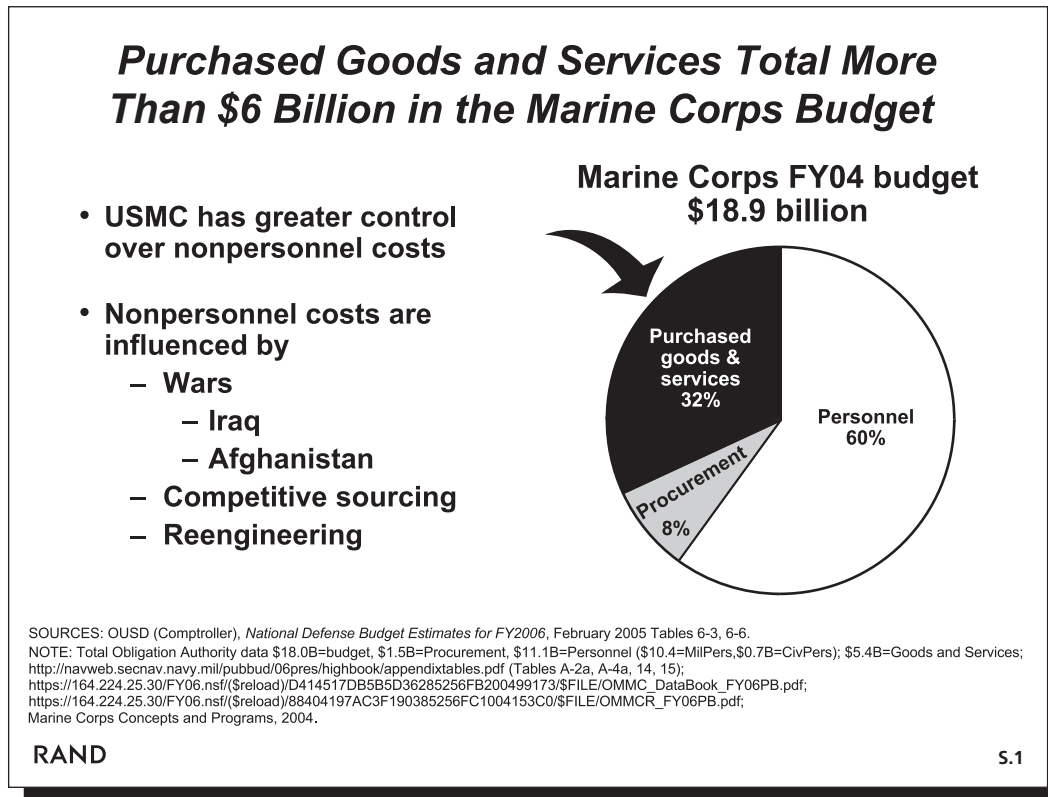
Improved purchasing and supply management (PSM) practices can offer ways for the Marine Corps to improve performance and save money through better management of its existing resources and freeing of funds for other priorities. Such practices may include consolidating multiple contracts, particularly sole-source contracts, with existing providers; selecting the best providers and offering them longer contracts with broader scopes of goods and services; and working with selected strategic partners to improve quality, responsiveness, and cost. Because of the success of earlier efforts by the Department of Defense (DoD) to improve PSM, as well as that of leading commercial firms, the Marine Corps retained RAND in September 2004 to perform high-level spend analyses of fiscal years 2003 and 2004 contract transaction data. In October 2004, it established a Strategic Purchasing Initiative (SPI) Integrated Process Team (IPT) that used these analyses to apply best PSM practices to its operations.

One of the steps in implementing best PSM practices is to conduct a spend analysis. A spend analysis is an analysis of expenditures along such dimensions as type of commodity or service and suppliers, number of contracts and expenditures, and other variables showing how current money is spent on goods and services. A spend analysis can help enterprises identify areas where PSM initiatives are likely to produce the greatest benefit. This document summarizes a high-level analysis of Marine Corps spending and identifies prospective PSM opportunities. This analysis was used by the SPI IPT to help target areas of spending for its initial commodity teams.

Background

In fiscal year (FY) 2004, the total Marine Corps budget was \$18.9 billion (Figure S.1). Of this, \$7.6 billion, or 40 percent, was for weapons (i.e., procurement) and other goods and services. Most of these expenditures are actually made by the Navy, Army, and Defense Logistics Agency (DLA) on behalf of the Marine Corps rather than directly by the Marine Corps itself. This analysis represents a first effort to document Marine Corps goods and services, a category not usually presented in military budgets.

Figure S.1



Because nonpersonnel costs are those over which the military services generally have greater control, and because the Marine Corps has a higher proportion of its budget devoted to personnel than the other services do, the Marine Corps has smaller opportunities than other services for PSM improvements. Nevertheless, the proportion of the budget devoted to goods and services in particular is worth careful consideration for two reasons. First, the nonpersonnel budget, particularly that for goods and services, has grown faster than the personnel budget in recent years. Second, the budget for these could continue to grow to the extent that operations in Iraq and Afghanistan require additional purchases, reengineering of business processes leads to decreased requirements for support personnel, or outsourcing of services leads to increased purchases of goods and services.

Several sources of data are available on direct expenditures by the Marine Corps as well as on indirect expenditures made by others on its behalf for weapons and other goods and services. Unfortunately, many years of decentralized purchasing practices across DoD means there is no single centralized database of purchases and that available data vary in quality.

This work seeks to provide as comprehensive an overview as permitted by extant data of direct spending and a significant portion of indirect spending.

Findings on Direct Purchases

For direct commercial purchases, one of the richest sources of extant data is DD350 data.¹ In FY 2004, the year we analyze, DD350 data covered 86 percent of the \$3.3 billion in direct commercial purchases by the Marine Corps. Although they constitute less than half of all Marine Corps purchases for goods and services, such purchases warrant special attention by the Marine Corps because of the control the service has over these expenditures.

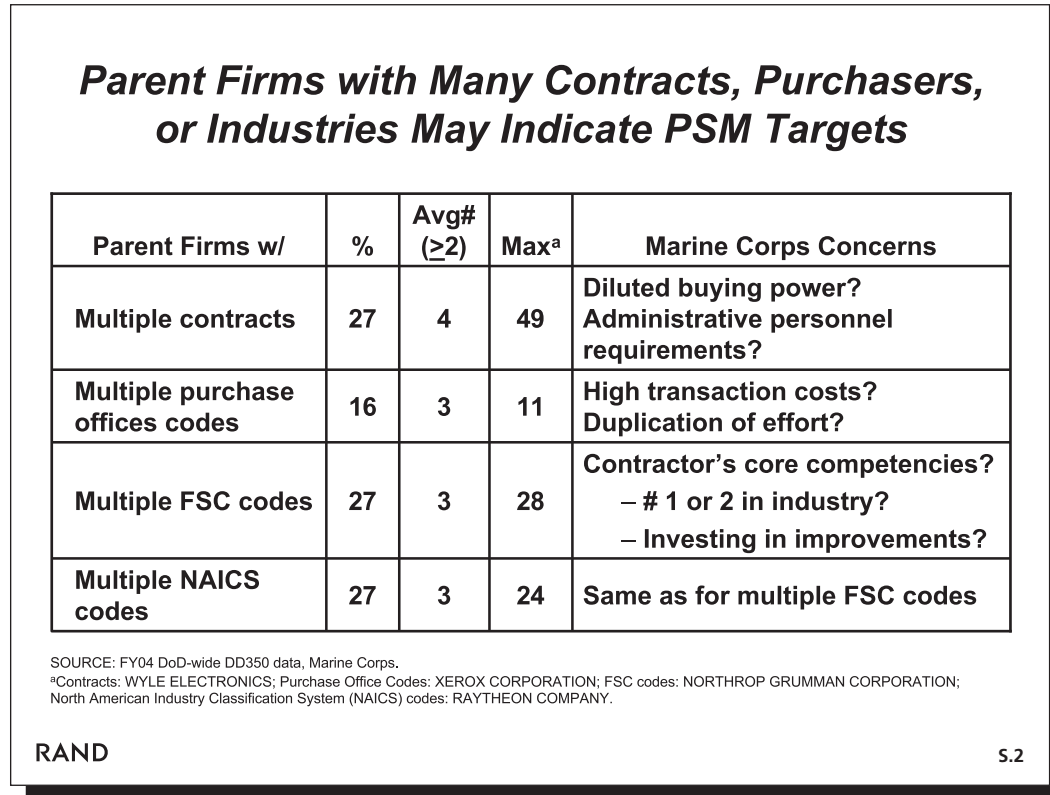
DD350 data offer detailed information for each contract action of at least \$25,000. (In recent years, they have included transactions of at least \$2,500 as well.) This information includes the cost of and the general category of the contract, which purchase office codes issued and used the contract, which provider won the contract, whether providers are small or disadvantaged businesses, industry classifications of purchases, the number of solicitations and offers, and the type of market (e.g., sole-source or competitive) for the commodity.

DD350 data show that the Marine Corps has

- *Seventeen different purchase office codes for buying weapons, goods, and services.* In some ways, the number of Marine Corps purchasers is quite lean. There are, for example, far fewer purchase office codes in the Marine Corps than in other services. Nevertheless, it could be leaner still. For example, the Marine Corps appears to have more than a dozen purchase office codes buying such commonly used commodities as office furniture and communications equipment. Consolidating such duplicated purchasing could improve performance by giving those with the greatest expertise responsibility for purchasing a commodity as well as help reduce transaction costs and realize savings, such as those from volume discounts. Further savings may be possible by consolidating purchases across DoD. Indeed, the Marine Corps participates in a commodity council for furniture and fixtures, established by the Navy in April 2005, and leads commodity teams for information technology, clothing, and office equipment. Recently, it has activated commodity teams for professional services and maintenance of equipment.
- *Multiple purchasers and contracts associated with the same parent firm.* More than one in four firms holding Marine Corps contracts have more than one such contract, with one firm having 49 contracts (Figure S.2). For companies with multiple contracts, the Marine Corps is paying repetitive bidding and contract administration costs through higher prices. The Marine Corps may also be diluting its buying power by using multiple contracts to purchase from the same firm. Reducing the number of these contracts

¹ The Marine Corps, along with the other military services and defense agencies, has long collected data on transactions equal to or greater than \$25,000 using the DoD Form 350, Individual Contract Action Report, which was stored in the DD350 Contract Action Reporting System.

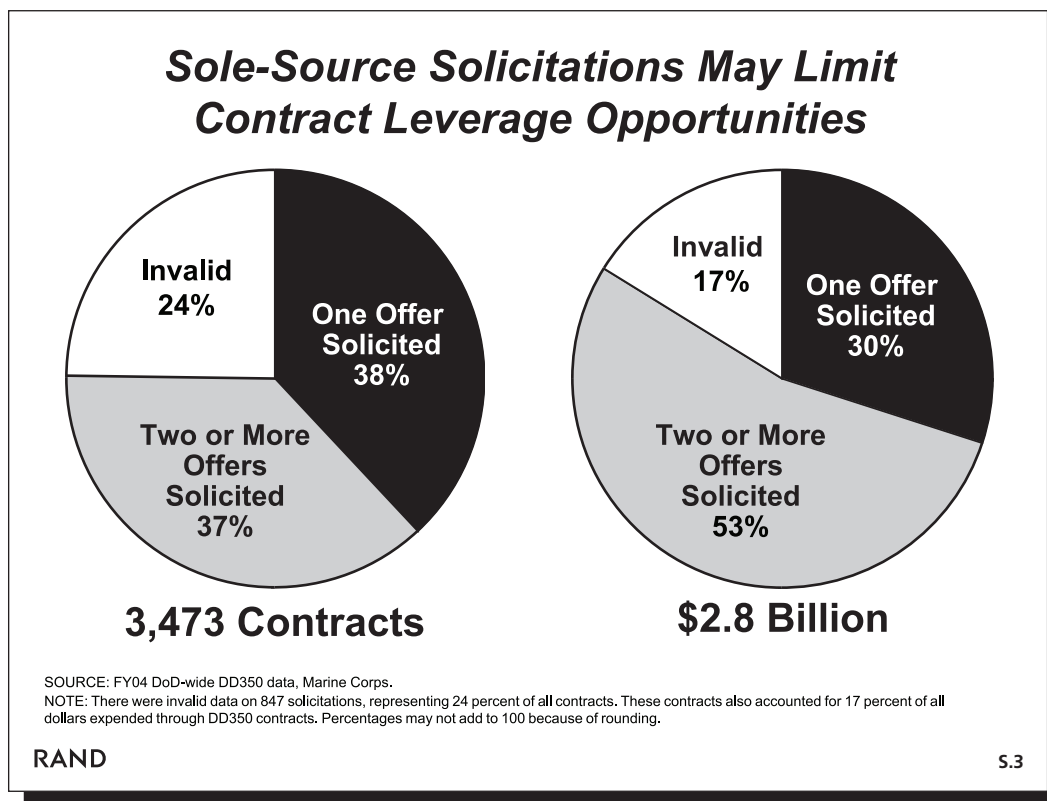
Figure S.2



may help the Marine Corps improve performance by increasing its leverage with these suppliers.

- *Many purchase office codes associated with the same contractor.* One in six firms with Marine Corps contracts deals with more than one purchase office code, with one supplier having contracts with 11 purchase office codes. When the same contractor has contracts with different offices of the same purchaser, the purchaser incurs indirect marketing costs and other higher transaction costs associated with each contractor selling goods and services to more than one activity of the purchaser. Purchasers may also find it difficult and costly to manage unnecessarily large numbers of contracts with the same provider.
- *Contracts for goods or services available from only one supplier.* Such sole-source contracts account for over one-third of the offers solicited on DD350 contracts (Figure S.3). Although sole-source contracts can be desirable, the opportunities for gaining leverage over sole suppliers may be limited. Still, the Marine Corps may be able to pursue performance improvements and cost savings with such suppliers. Several suppliers have a dozen or more sole-source contracts. Consolidating multiple sole-source contracts with the same sole-source supplier can reduce total costs for both the supplier and the Marine Corps.

Figure S.3



Findings on Indirect Purchases

In addition to DD350 data on direct purchases by the Marine Corps, we explore Active Contract File (ACF) data on purchases the DLA made on behalf of the Marine Corps. Although the ACF accounts for only about \$13 billion of the more than \$24 billion that DLA had made in direct purchases in FY04, it includes many more smaller contract actions (i.e., those that are less than \$25,000) than are present in the DD350.

Altogether, the ACF includes data on \$505 million in DLA purchases of goods for the Marine Corps in FY 2004. (Unlike DD350 data, ACF data do not include services.) These purchases represented 4 percent of the total DLA spend shown in the ACF. These data indicate that, for most goods it obtains through DLA, the Marine Corps would have to partner with other services for PSM improvements.

DLA purchased goods used by the Marine Corps through 54,241 contracts, covering 42,942 National Stock Numbers from 4,153 parent company ID codes. Sole-source and single-source contracts accounted for 43 percent of contracts and 24 percent of dollars for goods that DLA purchases for the Marine Corps. That is, DLA is purchasing for the Marine Corps many goods for which there are limited, or no, possibilities for substitution. Three in four contracts

as well as four in nine dollars for ACF goods that DLA purchases for the Marine Corps were with small businesses. Many of these purchases may stem in part from federal goals for small business procurement.

Many contracts and most contract actions and dollars managed by DLA are handled through automated actions. Automation can eliminate many of the PSM concerns associated with a large number of contracts, such as those DLA has. Nevertheless, some steps in “automated” processes—e.g., those for shipping goods—are not automated and, hence, can carry costs associated with those of multiple contracts. Furthermore, even “automated” purchases have some transaction costs, albeit ones that are smaller than those for manually processed purchases, which can become substantial when multiplied by thousands of contracts.

Many DLA goods are also shipped from suppliers by direct-vendor delivery (DVD) to the ultimate user. When introducing DVD for items such as nuts and washers consumed in repairs, DLA personnel noted that delays in expensive repairs could be avoided if such items were made available more quickly. DVD, however, can be costly and requires additional handling by users, who have to receipt and distribute many small packages. The trade-off between total costs for a potentially large number of shipments and reductions in inventory costs, as well as shorter order and ship times resulting from DVD, may be worth further analysis.

Conclusions

Although the sheer size of its spend for weapons, other goods, and services, nearly \$8 billion, merits attention, the area of opportunities the Marine Corps has for implementing PSM initiatives is smaller than that for the other military services. This difference is because of the large proportion of its spend devoted to personnel and the large amount of its spend for weapons, other goods, and services that is actually spent by others on its behalf.

Still, there are several PSM initiatives to improve performance and reduce costs available to the Marine Corps, many of which it has already taken, to improve performance and reduce costs. Data on both direct and indirect purchases indicate corporate contracts grouping several individual sole-source contracts may allow the Marine Corps to leverage its purchasing power for more favorable terms and conditions. Indeed, initial Marine Corps commodity teams reported, in October 2005, estimated savings that met their goals.

Our research provides a first review of how Marine Corps purchases of different commodity groups and with leading suppliers compare with those of other DoD purchasers, and we discuss who should provide leadership, by supplier and commodity. Our research also indicates who might be best positioned within DoD to provide leadership with certain suppliers or for certain commodities. As a result, the Marine Corps SPI IPT decided to take a two-tier approach. Tier I would establish Marine Corps-wide commodity teams, while Tier II would focus on Marine Corps participation in commodity teams led by others (Simon, 2006).

Although the Marine Corps is typically not the largest DoD purchaser from a given corporation or within a given industry, it is the DoD leader in some niches (e.g., particular sole-source commodities from certain firms) and can help leverage DoD spend more generally. In addition, its PSM initiatives can serve as a model for other military branches and agencies.

Its food service contract consolidation, for example, appears, according to these data, to be a good example of improving business practices and adapting purchases of a commodity to local needs and tastes.

A thorough spend analysis would identify not only opportunities for improving performance and reducing costs but also some of the risks that may be associated with using innovative PSM practices. These include situations in which there may be

- suppliers with financial problems
- low or highly variable demand
- no contract
- no supplier performance incentives or commitment to improve
- inadequate or limited past performance information
- inappropriate scopes of work.

The data we examined offer no information on these variables. Some of them may be relatively simple to analyze in other existing spend data. Others must be researched more carefully using additional internal and external data sources. In particular, conducting a complete Marine Corps spend analysis would require information on the needs, preferences, and priorities of commodity users not indicated in these data. Because the Marine Corps needs to balance prospective savings, performance improvements, risks, and other policy goals, not all best commercial practices may be appropriate for it. Nevertheless, because it is also a comparatively small purchaser of goods and services within DoD, it can benefit most from spend analyses seeking to increase overall leverage, both for itself and the other military services and agencies.

Acknowledgments

We gratefully acknowledge several individuals who helped us during the course of this research. Lee Simon, senior project leader of the Business Engineering Team at the Naval Facilities Engineering Command, gave us useful guidance about issues of greatest concern to the Marine Corps. Roger Jorstad of the Defense Management Data Center helped us obtain the Data Universal Numbering System (DUNS) file that we used for aggregating data to parent companies and to check their socioeconomic status. Richard Baker at the DLA Office of Operations Research and Resource Analysis (DORRA) provided the detailed DLA data, including the Active Contract File, market factors for each service market, and other associated files needed for analyzing DLA spend data. Mark Wang and Justin Adams of RAND also provided helpful reviews and suggestions for improvement. Aaron Kofner calculated several statistics (e.g., Marine Corps percentages of supplier sales) published in this analysis. Pamela Thompson and Terri Perkins helped prepare the charts of this analysis, and Donna Mead helped format the document.

Abbreviations

ABVS	Automated Best Value System
ACF	Active Contract File
ADO	Automated Delivery Order
ADP	automatic data processing
AMC	Acquisition Method Code
BSM	Business Systems Modernization
CAGE	Commercial and Government Entity
CT	commodity team
DIOR	Directorate for Information Operations and Reports
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDAAC	DoD Activity Address Code
DORRA	DLA Office of Operations Research and Resource Analysis
DUNS	Data Universal Numbering System
DVD	direct-vendor delivery
EPPI	Electronic Procurement Program Interface
FMS	Foreign Military Sales
FSC	Federal Supply Class
FSG	Federal Supply Group
FY	fiscal year
GSA	General Services Administration
IDPO	Indefinite Delivery Purchase Order

IPT	Integrated Process Team
MIPR	Military Interdepartmental Purchase Request
NAICS	North American Industry Classification System
NIIN	National Item Identification Number
NSN	National Stock Number
ODA	other defense agency
PACE	Procurement Automated Contract Evaluation
POPS	Paperless Order Placement System
PPI	Producer Price Index
PSC	Product and Service Code
PSM	purchasing and supply management
RDTE	research, development, testing, and evaluation
SAMMS	Standard Automated Materiel Management System
SBA	Small Business Administration
SIC	U.S. Standard Industrial Classification
SPEDE	Small Purchase Electronic Data Exchange
SPI	Strategic Purchasing Initiative
TRANSCOM	United States Transportation Command
UNICOR	Federal Prison Industries, Inc.
USMC	United States Marine Corps
WHS/SIAD	Washington Headquarters Services/Statistical Information Analysis Division



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***Targets for Marine Corps Purchasing
and Supply Management Initiatives:
Spend Analysis Findings***

1

Like the other military services, the U.S. Marine Corps (USMC) must execute an increasingly broad array of tasks. In recent years, the Marine Corps has conducted operations from Afghanistan to the Horn of Africa and from Iraq to Liberia. In conducting these operations, the Marine Corps has had to embrace new operational and support concepts and to make the most of existing resources.

Applying best purchasing and supply management (PSM) practices to its purchases of goods and services offers the Marine Corps one means to improve performance and make the most of its resources. Such practices may include developing a more “strategic” approach to

PSM—focusing on best values rather than on low bids, mutual efforts by the supplier and the customer to improve processes, and means to reduce transaction costs.¹

Accordingly, the Marine Corps is aggressively seeking to apply best PSM practices to its operations. Among the initiatives it has launched is a Strategic Purchasing Initiative (SPI) Integrated Process Team (IPT), which was created in October 2004 to conduct an end-to-end review of product and service acquisition processes (Simon, 2006; United States Marine Corps, 2004).² This team analyzed (1) strategic sourcing questions—i.e., from whom the Marine Corps buys, and (2) purchasing processes—i.e., how it buys.

One of the first steps to implementing best PSM practices is to conduct a spend analysis. The Marine Corps strategic sourcing process is designed to include an overall analysis of expenditures, or spend, by commodity. The Department of Defense (DoD) is also developing commodity teams for purchasing goods and services across the department and is requiring these teams to develop the capability to conduct spend analyses. For example, as we will discuss later, the SPI IPT reviewed early RAND analyses of Marine Corps spending to establish priorities and commodity teams to improve PSM practices (Simon, 2006).

Spend analyses for the Marine Corps and other components of DoD can help identify opportunities and prospective risks for improved PSM practices within each component. They can also help each component identify appropriate partners for developing and implementing such practices.

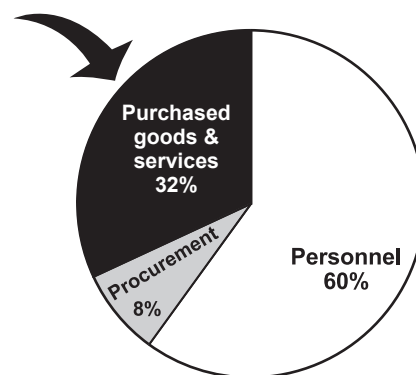
¹ For a broader discussion of purchasing and supply management, see Dobler and Burt (1996), Ellram and Choi (2000), Chapman et al. (1998), and Flynn and Farney (2000). Flynn and Farney (pp. 2–3) note that although “the term *purchasing* has long been used to describe the functional role of those who own the process by which outside inputs are controlled . . . the term *supply management* is now often used to capture [a] more strategic role for purchasing within the enterprise.”

² The Strategic Purchasing Initiative is an effort by the Marine Corps Business Enterprise Office to develop “techniques and best practices that improve the purchasing support to customers and reduce transaction costs” (United States Marine Corps, 2004, p. 5). Once implemented, the initiative is expected to achieve savings of \$10 million annually.

Purchased Goods and Services Total More than \$6 Billion in the Marine Corps Budget

- USMC has greater control over nonpersonnel costs
- Nonpersonnel costs are influenced by
 - Wars
 - Iraq
 - Afghanistan
 - Competitive sourcing
 - Reengineering

**Marine Corps FY04 budget
\$18.9 billion**



SOURCES: OUSD (Comptroller), *National Defense Budget Estimates for FY2006*, February 2005 Tables 6-3, 6-6.

NOTE: Total Obligation Authority data \$18.0B=budget, \$1.5B=Procurement, \$11.1B=Personnel (\$10.4=MilPers, \$0.7B=CivPers); \$5.4B=Goods and Services; <http://navweb.secnav.navy.mil/pubbud/06pres/highbook/appendixtables.pdf> (Tables A-2a, A-4a, 14, 15); [https://164.224.25.30/FY06.nsf/\(\\$reload\)/D414517DB5B5D36285256FB200499173/\\$FILE/OMMC_DataBook_FY06PB.pdf](https://164.224.25.30/FY06.nsf/($reload)/D414517DB5B5D36285256FB200499173/$FILE/OMMC_DataBook_FY06PB.pdf); [https://164.224.25.30/FY06.nsf/\(\\$reload\)/88404197AC3F190385256FC1004153C0/\\$FILE/OMMCR_FY06PB.pdf](https://164.224.25.30/FY06.nsf/($reload)/88404197AC3F190385256FC1004153C0/$FILE/OMMCR_FY06PB.pdf); Marine Corps Concepts and Programs 2004.

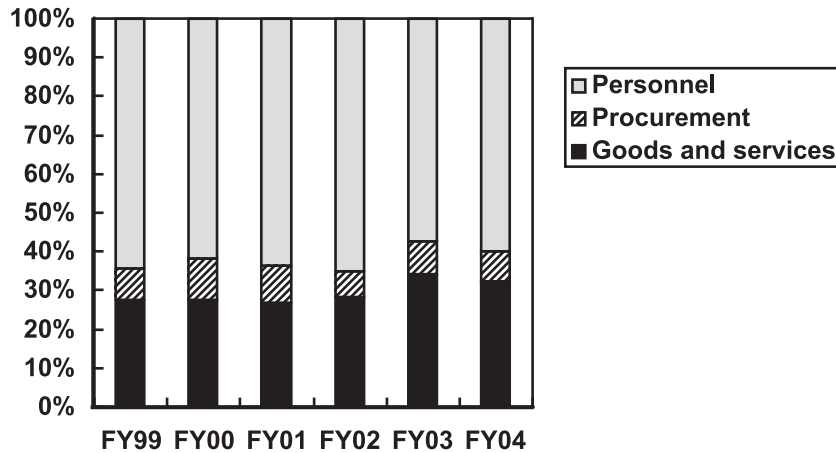
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Purchased goods and services constitute \$6.1 billion, or 32 percent, of Marine Corps expenditures in fiscal year (FY) 2004. Procurement of weapon systems constituted an additional \$1.5 billion, or 8 percent, and personnel costs constituted \$11.3 billion, or 60 percent. By contrast, only 36 percent of all DoD expenditures were for personnel costs.

Although the proportion of the Marine Corps budget going to purchased goods and services and procurement of weapons is smaller than that for the rest of DoD, these areas of expenditure deserve special attention for at least three reasons. First, the military services have greater control over the portions of their budgets that are not devoted to personnel. Second, expenditures for purchased goods and services could grow to the extent that outsourcing of services leads to increased purchases of goods and services from external suppliers or the reengineering of business processes leads to decreased requirements for support personnel. Commercial firms have increased their purchases of external goods and services at the same time as they have focused more on tasks where they can contribute the greatest value and outsourced those that are not part of their core competencies. Similarly, better management of external purchases of goods and services could help the Marine Corps free up personnel for more important, mission-related activities and also lead to improved logistics support.

Purchased Goods and Services Have Recently Increased as a Proportion of the USMC Budget



SOURCE: U.S. Department of Navy, Office of Budget, Budget Resources Directory, 1998–2004.
http://navweb.secnav.navy.mil/pubbbud/06pres/budget_pb06_u.htm

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The third reason that nonpersonnel costs, particularly purchases of goods and services, merit special attention is their increasing share of the Marine Corps budget. Between FY 1999 and FY 2004, expenditures on purchased goods and services increased 97 percent, while those for procurement of weapons increased 67 percent and those for personnel increased 57 percent. As a result, purchased goods and services increased from 28 to 32 percent of the Marine Corps budget.³

Most weapons, goods, and services used by the Marine Corps are purchased on its behalf by the Navy, the Army, and the Defense Logistics Agency (DLA). Accordingly, analyses of its spend should focus separately on these indirect purchases by the Marine Corps and on the direct purchases of goods and services it makes, and over which it has the most control.

³ In recent decades, purchased goods and services have grown very rapidly as a proportion of the budget for private enterprises, from about 30 percent a quarter century ago to about 70 percent today (Atkinson, 2000).

Key Questions

- **What do existing data indicate about opportunities for applying best PSM practices?**
- **Does the Marine Corps have the necessary information to support the use of these practices?**
- **What can the Marine Corps do to better support the application of best PSM practices?**

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Several DoD initiatives to improve PSM for goods and services have used a spend analysis to guide their efforts (for examples, see Chenoweth and Grammich, 2006; Moore et al., 2002; Moore et al., 2004; and Simon, 2006). Spend analyses have also been key to private-sector PSM improvements. A survey of 157 supply chain executives found 80 percent viewed analysis of spending as “very important” or “critical” to the success of their enterprise (Aberdeen Group, Inc., 2002, p. 6). A spend analysis can help enterprises focus purchasing practice improvements on areas where they are likely to produce the greatest benefit (Sawchuk, 2002).

The success of spend analyses and other efforts to improve purchasing and supply management practices in other enterprises has motivated similar, aggressive efforts by the Marine Corps to document and better manage its own processes. In this document, we seek to help the Marine Corps answer several questions in targeting their PSM initiatives, including the following:

- What do existing data indicate about opportunities for applying best PSM practices and improving performance (e.g., responsiveness, quality, reliability, flexibility, cost)?
- Does the Marine Corps have the necessary information, including centralized data on supply and management contracts, to effectively support improved PSM practices?
- What can the Marine Corps do to better support the application of best PSM practices?

In the next chapter, we provide an overview of a spend analysis, including the RAND approach to one for the Marine Corps. In Chapter Three, we present a broad overview of prospective opportunities as indicated by the data we examine for the Marine Corps to improve its PSM practices for direct purchases. In Chapter Four, we examine some prospective opportunities for improving PSM practices regarding some specific commodities and suppliers. In Chapter Five, we examine data on spending by the DLA to indicate some prospective opportunities for PSM improvements in indirect purchases by the Marine Corps. We present our conclusions and recommendations in Chapter Six. The appendix includes a discussion of DD350 data⁴ and analysis issues.

⁴ The Marine Corps, along with the other military services and defense agencies, has long collected data on transactions equal to or greater than \$25,000 using the DoD Form 350, Individual Contract Action Report, which was stored in the DD350 Contract Action Reporting System.

Overview of a Spend Analysis

Outline

Overview of spend analysis

General opportunities for the Marine Corps to improve direct purchasing practices

Insights on direct purchases by the Marine Corps of specific commodities and suppliers

DLA spending on behalf of the Marine Corps

Lessons for the Marine Corps

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5

This work is a direct outgrowth of RAND research on the implementation of innovative PSM practices at commercial firms and the use of spend analyses in developing PSM strategies (Moore et al., 2002). As part of its effort to improve purchasing practices, the Marine Corps asked RAND to conduct a first-order spend analysis—i.e., a spend analysis using currently available data.

What Is a Spend Analysis?

- **An in-depth analysis of purchases by**
 - **Product, service, dollar value, number of contracts, supplier, purchasing organization, etc.**
- **An in-depth evaluation of the supplier base by**
 - **Industry, firm, geography, risk, dependency, socioeconomic factors, etc.**
- **The application of analytical and benchmarking tools with these analyses to identify prospective opportunities and current risks**

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6

A spend analysis is an evaluation of enterprise-wide

- *Purchases*—i.e., what an enterprise is buying, including purchases by product or service, dollar value, number of contracts, supplier, and purchasing organizations
- *Supplier base*—i.e., its suppliers by industry, firm, geography, risk, dependency on (or percentage of business from) the enterprise, and socioeconomic variables, such as those identifying small or disadvantaged businesses that may be relevant to purchaser policy goals.¹

A spend analysis can be time consuming and labor intensive. Nevertheless, without one, private firms have found it difficult to make the case for changing current practices, to identify prospective targets for better PSM practices, to develop supply strategies for specific commodities, to select the best suppliers, and to manage suppliers so as to maximize rewards and minimize risks.

Spend analysis data can show where altering purchasing practices could result in significant savings or performance improvements. Enterprises may have different divisions unknowingly buying from the same supplier and not be fully aware of the total leverage they have with

¹ For a description of the characteristics, benefits, and challenges of three levels of spend analysis and their increasing application in business, see Aberdeen Group, Inc. (2002).

suppliers. A spend analysis can identify such patterns and resulting opportunities to leverage buying power by consolidating with and across suppliers as well as across goods and services.

A spend analysis combines analytical and benchmarking techniques (as practiced by such firms as Aberdeen Group, *Answerthink*, Ariba, and Dun & Bradstreet) to help identify prospective opportunities and current risks in purchasing and supply management. Many enterprises classify or segment their purchases by dollar value or business volume.²

More recently, innovative companies have begun to classify their spend by vulnerability and value.³ Purchased goods and services with similar levels of vulnerability and value are grouped together for purposes of allocating purchasing resources and developing supply strategies. Goods and services with the greatest vulnerability and value, for example, are often assigned to the most senior or qualified purchasing personnel. These personnel then develop supply strategies and adjust their sourcing approach and relationships to market conditions for the product or service.

Altogether, a spend analysis integrates internal spend data and external data on markets and suppliers from quantitative and benchmarking analyses to identify risks and opportunities for savings and performance improvements through application of best PSM practices. It reviews corporate family relationships to identify interrelated or duplicate suppliers as well as commodities and commodity groups for consolidation or substitution possibilities. It can also be used to measure compliance with preferred vendor programs.

Prior to conducting a spend analysis for the military, we reviewed existing literature, interviewed managers at firms with best PSM practices, and gathered information at conferences for purchasing professionals. We then collected DoD purchasing data to identify major components of total expenditures for the Marine Corps and other services. Other DoD branches buy goods and services similar to those that the Marine Corps purchases. Considering these purchases as well may help identify what benefits the Marine Corps and other branches of the military may gain from consolidating their purchases.

² Dollar value is the spend an enterprise may have on a commodity or with a supplier. Business volume is measured by the number of transactions or suppliers for spend. Analysis by dollar value or business volume is often called a Pareto or ABC analysis. The economist Vilfredo Pareto observed that 80 percent of Italy's wealth was held by 20 percent of the population (Rain, 2004).

³ Vulnerability is the risk or exposure realized when procuring a good or service. It may result from market failure, environmental risks, natural disasters, or other catastrophic events. The value of a commodity in a spend analysis for purchasing and supply management includes the effect of a purchased good or service on final products and overall costs and profits. Supply segmentation by vulnerability and value, also called supply positioning, is based on modern portfolio theory for quantifying the relationships between risks and returns (Olsen and Ellram, 1998).

Indicators of Prospective Sourcing Opportunities

- **Performance improvement**
 - **Varied or poor quality and/or delivery**
 - **Long wait times**
 - **Little information sharing or supplier innovation**
 - ***Few multiple year contracts***
- **Savings**
 - ***Suppliers with multiple contracts***
 - ***Products or services with many suppliers***
 - ***Many independent buying organizations***
 - **Cost growth exceeding PPI growth**

We discuss those that are *bold italics* in this document

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7

Any sourcing decision has the potential to yield rewards or introduce risks to operations (Moore et al., 2002; Sawchuk, 2002). Rewards include opportunities for performance improvements and savings (Aberdeen Group, Inc., 2002). Risks arise when overall performance suffers as a result of supplier failures and supply chain or supplier performance issues, including delays from order to delivery of critical parts, variable quality of purchased commodities, or increasing costs.

Opportunities for performance improvement are indicated by performance data on a supplier demonstrating varied or poor quality, long or inconsistent wait times, little information sharing or supplier innovation, and few multiple-year contracts.⁴ Innovative suppliers may apply different strategies to different groups of customers, just as, for example, airlines provide better service to their most frequent fliers—and most profitable customers (Steele and Court, 1996).

Opportunities for savings result from increased leverage, economies of scale or scope, and reduced transaction costs (Moore et al., 2002). For example, the Marine Corps ranked its spend by both contract dollars and contract transactions (Simon, 2006), which allowed it to identify prospective opportunities for leverage and reductions in transaction costs. A spend analysis that identifies suppliers with multiple contracts, similar products or services being

⁴ As we will discuss later, short-term contracts often discourage suppliers from investing in performance improvements, because the payback period may exceed contract length or otherwise be too short to cover investment and other costs.

provided by multiple suppliers, or different organizations or parts of an enterprise purchasing the same goods or services offers evidence of prospective opportunities for savings through consolidation of purchases. A spend analysis finding supplier cost growth exceeding that of the Producer Price Index (PPI) indicates that a supplier may be exploiting a buyer or that the supplier is not doing enough to control costs or to identify opportunities for savings.⁵

⁵ See Ellram (2002) for an example of how John Deere measures cost savings relative to the PPI.

Indicators of Prospective Sourcing Risks

We examine situations in which there is *only one supplier or few bidders*. Other indicators include

- **suppliers with financial problems**
- **goods or services with low or variable demand**
- **no contract**
- **no supplier performance incentives or commitment to improve**
- **inadequate or poor information on past supplier performance**
- **inappropriate scope of work**

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8

Prospective sourcing risks can be indicated by cases with⁶

- only one supplier, limited competition, or limited substitution capabilities. These factors could lead to opportunistic behavior by suppliers (Williamson, 1985). Past reports from the DoD Inspector General have documented opportunistic behavior by defense contractors, including overcharging or incorrectly billing for work (see, for example, Phinney, 2004; Ivanovich, 2004; and Dine, 2002). We examine some situations in which there is only one supplier or few bidders. A complete spend analysis would include other indicators of risks, as listed below, that we do not address.
- suppliers with financial problems. Such problems could cause a supplier to go out of business or shirk on performance. Due diligence regarding supplier finances and capabilities is among the standard practices to prevent such actions.
- low or variable demand. Suppliers prefer stable workloads because variable workloads increase costs, thus making it difficult for a buyer to find and retain good suppliers (Hahn, Kim, and Kim, 1986). Suppliers also need stable business to maintain specialized equipment, retain personnel, and otherwise continue operations.
- no contract in place. If no contract is in place, suppliers may, unknown to the buyer, leave the market—leaving the buyer in the lurch when needing an item. This situation can be

⁶ See Cox (2001a, 2001b) for a more general discussion of these issues.

particularly difficult when buyers need to find a new supplier for a low-demand item for which no other supplier may be available. Even if another supplier is available, such a situation can add considerable time to the supply process, as personnel identify new suppliers, go through the bidding process with them, select one, and negotiate a contract.

- no supplier performance incentives or a prescriptive statement of work. The lack of a commitment to improve or an outcome-oriented statement of work limits possibilities for improvement.
- inadequate or poor past performance information. This lack prevents replacement of poor performers and identification of new and innovative suppliers.
- inappropriate scopes of work. Such a situation may arise when contracts cover too little, or too much, work, creating diseconomies of scope and leading to decreased performance or increased costs.

Some of these problems may be relatively easy to identify in existing data, although only the first can be analyzed with the data available to us on Marine Corps spending. Other problems must be researched in more detail using other data.

Indicators of prospective opportunities for performance improvements and savings or for possible risks of applying best PSM practices can help in targeting PSM initiatives and tailoring supply strategies to specific circumstances. We examine opportunities the Marine Corps may find for PSM initiatives, including goods or services with many suppliers, suppliers with many contracts, and many independent buying organizations purchasing the same good or service. We also examine how uncompetitive markets, including those with sole sources, may limit these opportunities.

In the remainder of this chapter, we review the available data for analyzing spending by the Marine Corps.

USMC Direct Purchases Totaled \$3.3 Billion in FY 2004

- **DD350 data, 86 percent of purchase dollars**
 - Detailed information for each contract
- **DD1057 data, 4 percent of purchase dollars**
 - Monthly summaries by purchase office for contract actions of less than \$25,000
- **Government purchase cards, 10 percent of purchase dollars**
 - Summaries of monthly purchases of no more than \$2,500 by card “owner”

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9

Many years of decentralized purchasing practices mean there is not a single detailed, centralized database of DoD purchases. Furthermore, among the disparate sources that exist on DoD purchases, the quality of data varies widely. For large purchases, there are fairly detailed and generally accurate data available for analysis of direct purchases of weapons, goods, and services. Aggregating these data for analysis of total direct purchases across the organization, however, means also aggregating the errors that occur in any individual purchasing office.

In FY 2004, the Marine Corps spent \$3.3 billion on direct purchases of weapons and other goods and services from organizations outside the government. This direct spend includes products ranging from weapon systems to ammunition to spare parts to repair services to base operating services to automatic data processing (ADP) equipment and software. Much of this recent spend may have been related to operations in Iraq and Afghanistan—e.g., for damaged equipment that needed repair or replacement, consumable supplies that needed replenishment, or new weapon systems in theater.⁷

The vast majority, or 86 percent, of direct Marine Corps expenditures in FY 2004 were reported in DD350 data. DD350 is used to collect data on contract actions typically worth at

⁷ The DoD, including the Marine Corps, had responsibilities for managing 70 percent of Iraq reconstruction costs (Witte, 2005). By one estimate, “the Corps needs \$12 billion to bring its ground, communications, and aircraft equipment back up to their levels before the Iraq war” (Rogers, 2006).

least \$25,000.⁸ DD350 data include information on the amount of and the general category of the contract, which purchase office codes issued and used the contract, which provider won the contract, whether providers are small or disadvantaged businesses, industry classifications of purchases, the number of solicitations and offers, and the type of market (e.g., sole source or competitive) for the good or service. DD350 data do not contain item-level data, such as part number or name, which an ideal spend analysis data source would include. The DD350 data feed into the Federal Procurement Data System that Congress and executive branch agencies use “to assess the impact that government-wide acquisition policies and processes are having on the [procurement] system generally as well as with respect to specific geographical areas, markets, and socio-economic goals” (Woods, 2003).

There are some shortcomings of DD350 data for detailed spend analysis. These include miscodes for business size as well as Federal Supply Class (FSC) and Product and Service Code (PSC)—variables that are used to classify purchases by industry. (See the Appendix for a more thorough discussion of DD350 data and analysis issues.) Still, the considerable detail in these data makes them useful for high-level spend analyses.

Other sources of DoD and Marine Corps direct-purchasing data are less rich. For most direct purchases of smaller amounts in FY 2004, including most made through contract transactions of less than \$25,000, only DD1057 data are available.⁹ DD1057 data offer only monthly totals by purchase office code for total contract actions to and dollars spent with businesses of varying socioeconomic status. Government purchase cards constituted the remaining 10 percent of direct Marine Corps purchases in FY 2004. Such purchases are summarized monthly by card “owner,” the government employee cardholder to whom the credit card has been issued by the bank. Neither DD1057 data nor the monthly summaries of government purchase card use offer detailed data on what was being purchased. Both sources also lack such detailed data on suppliers as those available in the DD350 data. We therefore rely on DD350 data for this high-level analysis of Marine Corps purchases.

⁸ Traditionally, DD350 data were required for contract actions of at least \$25,000, but starting in FY 2005, Federal Acquisition Regulation 4.602(c)(1) required such actions of at least \$2,500 to be recorded as well. This threshold was raised to \$3,000 in FY 2007 when the micropurchase threshold was raised, except for a \$2,000 threshold for construction work covered by the Davis-Bacon Act and a \$2,500 threshold for service work, such as custodial, janitorial, and housekeeping services. The Marine Corps has implemented this lower threshold over time. In FY 2003, 1.9 percent of Marine Corps contract actions reported on DD350 forms were \$25,000 or less, representing less than 0.1 percent of Marine Corps DD350 contract dollars. In FY 2004, 27.1 percent of contract actions reported on DD350 forms were \$25,000 or less, representing less than 0.3 percent of Marine Corps DD350 contract dollars. The proportion of Marine Corps expenditures covered by DD350 data appears to have increased between FY 2003 and FY 2004. In FY 2003, 83 percent of direct Marine Corps purchases—and about a third of all Marine Corps purchases of weapons, other goods, and services—were reported in DD350 data. Our analysis shows that in FY 2004, about two-fifths of all Marine Corps direct and indirect purchases of weapons, other goods, and services were reported in DD350 data.

⁹ DD1057 data were eliminated in FY 2005, and all contract actions of at least \$2,500 (increased to \$3,000 in FY 2007 with the exceptions noted in footnote 8) were required to be reported on DD350 forms (Lee, 2004).

USMC Had Approximately \$4.3 Billion in Indirect Purchases in FY 2004

- **Funds include transfers to other military services, DLA, GSA, TRANSCOM, MIPRs, material requisitions, etc.**
- **The Navy, Army, and DLA purchase most weapons, goods, and services used by the Marine Corps**
- ***DLA expenditures are examined further in this document***

RAND

10

We surmise that Marine Corps funds that are not spent on personnel or on direct purchases of weapons and other goods and services are for intragovernment purchases. Put another way, as we saw earlier, in FY 2004, the total Marine Corps budget was \$18.9 billion, of which 60 percent, or \$11.3 billion, was for personnel, and 40 percent, or \$7.6 billion, was for weapons and other goods and services. DD350, DD1057, and government purchase cards accounted for \$3.3 billion in direct purchases, leading us to surmise that the remaining \$4.3 billion was for intragovernmental purchases.

Unfortunately, we can only infer the total volume of Marine Corps indirect purchases—i.e., purchases made by other organizations on behalf of the Marine Corps. We can generally infer few details on this spend as well. This lack of data is particularly problematic for a Marine Corps spend analysis, given that the Marine Corps acquires most of its weapons, goods, and services through indirect purchases.¹⁰

Intragovernment purchases include funds transfers to DLA, the General Services Administration (GSA), and the United States Transportation Command (TRANSCOM), as well as via Military Interdepartmental Purchase Requests (MIPRs) and other material requisitions. Following our analysis of Marine Corps DD350 purchases, we review data on DLA pur-

¹⁰ The data above indicate that the Marine Corps acquires 57 percent of its weapons, goods, and services through indirect purchases. By contrast, earlier RAND research indicated that the Air Force acquires only 28 percent of its goods and services through indirect purchases (Moore et al., 2004).

chases, focusing on those made on behalf of the Marine Corps. We use an extract from the FY 2004 Active Contract File (ACF) in the Standard Automated Materiel Management System (SAMMS) for this analysis. We discuss our choice of the ACF rather than another data system to assess indirect purchases in our chapter on DLA purchases.

We had planned to analyze Navy and Army purchases on behalf of the Marine Corps as well by using weapon system codes in the DD350 data to identify purchases for weapons the Marine Corps owns but that are purchased and managed by the other services. Unfortunately, the weapon system codes in the DD350 data were changed in FY 2004 to focus on new weapon systems. This change made it impossible to estimate weapon-system related purchases on behalf of the Marine Corps for many of its older weapons.

Additional Data Are Needed for a Complete Spend Analysis

- **Additional data for this analysis included**
 - **DoD-wide DD350 data for non-USMC purchases**
 - **Dun & Bradstreet DUNS file linking contractor ID codes to the parent firm ID code**
 - **Supplier financial data**
- **Complete, detailed analyses would require**
 - **Contract data linked to NSNs**
 - **External to DD350**
 - **DLA and other service data**
 - **Small dollar and other purchases (e.g., purchase cards, MIPRs)**

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11

We use several data sources to enhance our analysis. We use DoD-wide DD350 data to help identify other DoD purchasers for the goods and services that the Marine Corps purchases and the possibilities for consolidating such purchases across DoD.

We also obtained a DoD Dun & Bradstreet Data Universal Numbering System (DUNS) file linking defense contractor ID codes to parent firms. These data were current as of February 2005, about the same time that the FY 2004 DoD-wide DD350 data were released. Identifying total purchases made from any particular company can be difficult because many DoD suppliers have multiple divisions, names, locations, and contractor ID codes. By using the DoD Dun & Bradstreet file, we were able to aggregate purchases for each parent firm and identify leading providers of Marine Corps weapons, goods, and services. Such data must be interpreted carefully. Mergers, acquisitions, and sales change over time and make the relationship between subsidiaries, their locations, and parent firms a moving target for analysis.

We also used publicly available Securities and Exchange Commission data to determine Marine Corps and DoD percentages of sales for top suppliers (Securities and Exchange Commission, 2005). These data help us to learn the importance of the Marine Corps and the DoD to these suppliers.

A complete Marine Corps spend analysis would go beyond the data described here. Such data would be necessary for determining how to organize commodity teams for implementing best PSM practices, how to find appropriate partners for the Marine Corps in improving

its purchasing leverage, and how to develop supply strategies for meeting future commodity requirements.

For direct purchases, this effort would include analysis of smaller purchases that we do not review, particularly those made by government purchase cards. For indirect purchases, such an effort would require data on all other military services and organizations that purchase on behalf of the Marine Corps, not just the limited data that we later examine on DLA purchases.

For direct and indirect purchases, a complete spend analysis would require contract data linked to item-level data, such as National Stock Numbers (NSNs). It is difficult to link NSN-level data directly to DD350 data because multiple goods and services may be present on the same DD350 contract transaction. Our analysis of indirect purchases made by DLA on behalf of the Marine Corps includes NSN data, but these, as noted, represent only a small portion of total Marine Corps purchases.

Further Analysis Requires Substantial Information and Expertise

- **User needs, preferences, and priorities**
- **Markets**
 - **Leading suppliers**
 - **Consolidation practices**
 - **Terms and conditions**
 - **Performance measurement and incentives**
- **Technology, including latest processes, materials, and innovations**
- **Potential suppliers**
 - **Management style (e.g., centralized or autonomous units)**
 - **Breadth of core competencies**
 - **Synergy of goods and services**

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12

A complete Marine Corps spend analysis would also require analysis of the needs, preferences, and priorities of the ultimate users of weapons, goods, and services. Such a study might include, for example, analysis of specific items and quantities of purchased goods and services by contract and supplier—a level of detail beyond that in the data we examine. Two Marine Corps priorities for its PSM efforts were to support the operational forces and a high probability of rapid success—i.e., quick hits (Simon, 2006).

Research is also needed on supplier performance and contracts as well as on how the industry typically consolidates and offers goods and services for sale. Such information can help purchasers to structure contract requirements that reflect best industry practices and to attract the best suppliers to bid. Because DoD and Marine Corps buyers need to balance prospective savings, performance improvements, risks, socioeconomic and other goals, and regulations that may not be present in the private sector, not all best commercial practices may be appropriate in a government or military setting. Nevertheless, knowing the practices and processes typical in the industry, particularly the latest technology and innovations, will enable the purchaser to attract and select a supplier that does not lag the field. Knowing how much suppliers are investing in new technology also helps ensure that the organization's supply base will remain technologically superior.

Information on potential suppliers, their management, and their competencies also helps purchasers make the best supplier selection. Contracts with suppliers who provide relatively homogeneous goods or services may be an appropriate target for consolidation. Contracts may

not be as easily consolidated with a supplier such as General Electric, which has autonomous business units for distinct products, such as jet engines, plastics, and medical equipment. A thorough spend analysis also requires information on the core competencies and synergies of providers.

Analysis Must Take into Account Valid Motives for Current Spend

- **Valid reasons for current practices may include**
 - **need for diverse requirements, unique specifications, or standardization**
 - **lack of economies of scale or scope**
 - **separate funding sources**
 - **limited return on investment needed to develop new sources**
 - **independent supplier business units**
 - **political pressures for specific suppliers**
- **Data analysis is necessary, but not sufficient, for selecting PSM initiatives**

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13

A spend analysis also must recognize that many existing practices were developed in response to certain policies. That is, there may be valid reasons for current ways of purchasing weapons, goods, and services. These must be fully researched and understood to determine if new PSM practices can be applied to specific goods, services and suppliers.

Potential limits to using many PSM practices may include unique requirements limiting opportunities for consolidation. Grounds maintenance needs at Marine Corps facilities, for example, may include irrigation in the Southwest but not the Southeast.

In some cases, there may be limited economies of scale or scope,¹¹ different sources of funds that cannot be consolidated, suppliers resisting consolidation of contracts across independent business units, political pressures for specific types of suppliers, or initial investment requirements for developing new suppliers who exceed expected benefits. Hence, research beyond the analyses presented here are required before best PSM practices can be confidently applied to develop purchase and supply strategies, select suppliers, or negotiate contracts for specific groups of weapons, goods, or services.

¹¹ There may, for example, be no economies of scale available in grounds maintenance or janitorial services because of the site-specific nature of the service, but there may be economies of scope available in which different types of facilities support services at a single site can be grouped. Conversely, there may be economies of scale available in elevator service contracts, particularly for several locations, but little economy of scope available unless prospective facility management service suppliers have their own elevator support contract with terms at least as good as those the Marine Corps or DoD could get directly.

Nevertheless, we do examine some limited indicators of motives for selecting suppliers. For example, given federal preferences for purchasing from small businesses, we examine how small business participation might be affected by implementation of best PSM practices.

General Opportunities for Improving Direct Purchasing Practices

Outline

Overview of spend analysis

General opportunities for the Marine Corps to improve direct purchasing practices

Insights on direct purchases by the Marine Corps of specific commodities and suppliers

DLA spending on behalf of the Marine Corps

Lessons for the Marine Corps

RAND

14

We use DD350 data for analysis of direct purchasing by the Marine Corps. Such data can indicate many prospective opportunities for the application of best PSM practices. These may include consolidating contracts for the same good or service, within the same commodity group, with the same supplier, or across different purchasers.

In this chapter, we review some general indicators of areas where the Marine Corps may expect to find opportunities for improving PSM in its ongoing initiatives. We review overall DD350 purchases, including those by commodity, supplier, and purchaser. We examine competition in markets in which the Marine Corps purchases by assessing the number of sole

source contracts with providers in them. We also examine contract “churn” and the issues associated with it by reviewing the number of short-term contracts.

Summary of FY 2004 DD350 Transactions Reveals the Complexity of USMC Purchases

- **Prospective target areas**

- \$2.8 B in purchases
- 17 different purchase office codes
- 3,473 different contracts
- 2,297 different contractor ID codes
- 2,052 different parent company ID codes
- 661 different Federal Supply Class codes and Product and Service Codes

- **Prospective challenges**

	<u>Percent of dollars</u>	<u>Percent of contracts</u>
– Sole-source contracts	30	39
– Three or more bids	35	21
– Small business contracts	24	57
– Set-aside contracts	4	4
– Purchase orders	7	50

SOURCE: FY04 DoD-wide DD350 data.

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15

Altogether, Marine Corps DD350 purchases totaled \$2.8 billion in FY 2004. They accounted for just over a third of the dollars the Marine Corps spent on weapons, goods, and services, and more than five in every six dollars it spent on direct commercial purchases.

These data reveal the complexity of direct purchases by the Marine Corps. They show that 17 different purchase office codes procure weapons, goods, and services through 3,473 contracts with a large number of contractor facilities represented by 2,297 contractor ID codes.¹ These contracts were for a wide range of goods and services, represented by 661 different FSCs and PSCs.²

DD350 data indicate that for many Marine Corps goods and services, there are few suppliers, possibly limiting opportunities for PSM innovations. Sole-source and single-source

¹ For data collection purposes, the DoD assigns codes to each unique purchasing or contracting activity. Because there can be more than one purchasing activity and, hence, code at a location, we use the term “purchase office code,” which is also the name of the data element in the DD350 data, rather than “purchasing office” or a similar variant. Similarly, contractor ID codes denote physically separate facilities or sites or independent business units. A single parent firm (e.g., United Technologies Corporation) with more than one manufacturing facility, physical plant, or business unit (e.g., Otis, Carrier, Pratt and Whitney, Hamilton Sundstrand, Sikorsky) can have more than one contractor ID code.

² FSCs and PSCs are more finely grained federal government indicators of goods and services than the codes of the North American Industry Classification System developed by the Department of Commerce. FSCs refer to goods and PSCs to services. For ease of reading, and because most of the largest Marine Corps purchases are goods rather than services, we sometimes use “FSC” in our text and charts to refer to both goods and services, i.e., both FSCs and PSCs.

contracts account for 39 percent of DD350 contracts and 30 percent of DD350 contract dollars.³ Only 21 percent of Marine Corps contracts, representing 35 percent of DD350 contract dollars, had three or more bidders. Therefore, the Marine Corps is purchasing some weapons, goods, and services for which there are limited or no possibilities for competition or substitution. Nevertheless, the Marine Corps may still expect to find some opportunities for PSM improvements in sole- or single-source purchases, especially if the supplier is selling other goods and services to it.⁴ When there are credible substitutes for a product, single-source contracts may even be desirable if such contracts encourage the supplier to cooperate in initiatives to improve performance and reduce costs.

Most DD350 contracts held by the Marine Corps, accounting for nearly one-fourth of its DD350 spend, are with small businesses. Many of these contracts likely stem from federal preferences for small business procurement.⁵ Because small businesses account for 57 percent of contracts but only 24 percent of spend, it is possible that the Marine Corps may be incurring a large proportion of its transaction costs on a relatively small proportion of its spend. Four percent of DD350 contracts for the Marine Corps as well as 4 percent of DD350 contract dollars are for small disadvantaged businesses.⁶

Because of policy goals for procurement from small and disadvantaged businesses, the Marine Corps may expect some challenges in introducing such best PSM practices as supply base rationalization and consolidation. Implementing these practices could result in larger contracts and reduce its number of suppliers, including small and disadvantaged businesses that may not be able to provide the larger scale or scope of services required in consolidated contracts. Alternatively, small firms may seek to partner with other firms, both large and small, to provide a broader scale or scope of goods and services to the Marine Corps. We will later review some ways that the Marine Corps can expect to improve its PSM practices while continuing to fulfill small business policy goals. In particular, the large number of contracts held by small businesses suggests that requirements for such goods and services could be consolidated in a way that would not prohibit the same or other small businesses from winning the new, larger contracts.

A comparison of DD350 transactions in FY 2004 with those in FY 2003 reveals several shifts in Marine Corps purchases. The total Marine Corps spend on DD350 contracts

³ Sole-source contracts are those for which there are no other viable and capable providers of requested goods or services. Single-source contracts are those for which a source is selected among others for specific reasons. Sole- and single-source contracts are not unambiguously differentiated in DD350 data. Hence, our subsequent discussion of statistics on sole-source contracts may include single-source contracts as well.

⁴ Hannon (2004) provides a relevant private-sector example. He writes, "If a supplier makes the part only for Lockheed Martin, they naturally increase the price." Nevertheless, "if a certain supplier is not providing the level of savings desired and is bidding on other spend areas or business units, [then] the [Lockheed] Strategic Sourcing Solutions group can leverage that information and work with the supplier."

⁵ The DoD, like all federal agencies, has a congressional mandate to spend 23 percent of its prime contract dollars for procured goods and services with small businesses. For more on this mandate and its evolution, including difficulties the DoD may have in meeting it in future years, see Grammich et al. (forthcoming). For a discussion of how DoD purchasing from small businesses varies by industry, see Reardon and Moore (2005).

⁶ The federal goal for such businesses in FY 2004 was 5.0 percent, while the DoD goal was 5.2 percent.

increased from \$1.8 billion to \$2.8 billion. The Marine Corps purchased a wider variety of weapons and other goods and services in FY 2004, increasing the number of supply and service classes in which it buys from 1,365 to 2,052. Some of this increase may be attributable to the inclusion in the data of more contract actions of less than \$25,000.

Most DD350 Dollars Are Concentrated in a Few Broad Categories

	Two-Position FSC/PSC	\$s M	# ctrx	# ctr ID codes	% \$s sole srce	% \$s small biz	# PO cds
1	Ground effect vehicles, motor vehicles, trailers & cycles	488	63	53	44	3	11
2	ADP & telecommunication services	367	119	111	11	13	11
3	Professional, administration, & management support services (R)	362	225	176	11	28	16
4	Defense systems research & development (AC)	172	40	36	85	4	2
5	Communication, detection & coherent radiation equipment	162	223	168	53	42	17
6	Utilities & housekeeping services (S)	160	84	76	6	7	14
7	General purpose ADP equipment, (including firmware) software, supplies & support equipment	126	158	144	3	12	16
8	Clothing, individual equipment & insignia	118	85	70	18	46	12
9	Maintenance, repair & rebuilding of equipment (J)	104	171	150	29	15	14
10	Other research and development (AZ)	68	32	29	17	73	2
	Other	689	2,441	1,619	35	43	17
	Total	2,818	3,473	2,297	30	24	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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16

The above chart shows the leading broad categories in which the Marine Corps purchases goods and services. Columns in the chart represent

- Two-position FSC/PSC: also known as the Federal Supply Group (FSG)
- \$s M: the total money spent, in millions of dollars, on contracts within each category
- # ctrx: the number of contracts for each FSG
- # ctr ID codes: the number of different contractor ID codes associated with each broad grouping
- % \$s sole srce: the percentage of dollars in each category that were spent on sole- or single-source contracts
- % \$s small biz: the percentage of dollars in each category that were spent with businesses that self-certify as meeting Small Business Administration criteria for “small” businesses
- # PO cds: the number of different purchase office codes ordering each broad group of commodities or services.

Most (55 percent of) DD350 dollars were spent on the top four categories above; 76 percent were spent on the top ten. Typically, just one smaller category—i.e., just one four-digit FSC or PSC—comprises the bulk of purchases shown above. Of the \$488 million spent on the two-digit FSG for ground effect vehicles, motor vehicles, trailers, and cycles, for example, \$469 million was spent on the four-digit FSC for wheeled trucks and truck tractors.

In some cases, comparisons of broader categories with smaller component groupings may show areas worth further investigation. For example, the FSG for utilities and housekeeping services shows a fairly dispersed spend of \$160 million through 84 contracts with 76 different contractor ID codes. The bulk of this spend is for food services, on which, as we will discuss, the Marine Corps has already consolidated spend in a way that reflects local needs and preferences. Whether the remaining spend of just over \$15 million through more than 75 contracts and more than 70 contractor ID codes can be consolidated as food services has been unclear.

The proportion of spending on these broad groupings that is with sole sources varies widely, with most dollars on two FSGs going to sole sources. Similarly, the proportion of spending on these FSGs that is with small businesses varies widely, with three groupings having more than 40 percent of spend with small businesses. How these groupings might be consolidated among sole sources and small businesses as well as by purchase offices is an issue we consider while discussing individual four-digit FSCs.

Some Broad Categories with Many Contracts Have Relatively Low Dollars

	Two-Position FSC/PSC	# ctrx	\$s M	# ctr ID code s	% ctrx sole srce	% ctrx small biz	# PO cds
1	Professional, administration & management support services (R)	225	362	176	28	49	16
2	Communication, detection & coherent radiation equipment	223	162	168	43	54	17
3	Miscellaneous	180	44	168	54	56	13
4	Maintenance, repair & rebuilding of equipment (J)	171	104	150	44	52	14
5	General purpose ADP equipment, (including firmware) software, supplies & support equipment	158	126	144	27	63	16
6	Electrical & electronic equipment components	142	18	103	57	53	12
7	Furniture	139	36	102	8	45	14
8	Metal bars, sheets, and shapes	134	31	25	33	77	4
9	ADP & telecommunication services	119	367	111	27	46	11
10	Vehicular equipment components	119	49	68	55	48	9
	Other	2,053	1,518	1,516	37	57	17
	Total	3,473	2,818	2,297	39	57	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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17

Commodity groupings with high numbers of contracts may also indicate prospective targets for improving performance and reducing costs, particularly those related to contract administration. Here we show the broad groupings of goods and services in which the Marine Corps has the highest number of contracts. See the text for the previous chart. The new columns in the present chart represent

- % ctrx sole srce: the percentage of contracts in each category that were with sole sources
- % ctrx small biz: the percentage of contracts in each category that were with small businesses.

Five of the categories above—professional, administrative, and management support services; communication, detection, and coherent radiation equipment; maintenance, repair, and rebuilding of equipment; general purpose ADP equipment; ADP and telecommunication services—are also shown in the previous chart for top FSGs by total spend. That is, these groupings, perhaps not surprisingly, have a great many contracts for a great deal of spend.

Seven of the categories above—all but maintenance, repair, and rebuilding of equipment, general purpose ADP equipment, and electrical and electronic equipment components—also have individual four-digit FSCs that are among those with the highest number of contracts. In other words, addressing the number of contracts within key individual FSCs we will later review will help boost overall performance across the FSGs shown above.

Groupings with a high number of contracts but relatively low spend are also of interest here. For example, there were 139 contracts with 102 contractor ID codes for \$36 million in purchases of furniture. Much of this may reflect an effort to boost small business participation in overall provision of goods and services; 45 percent of spend for this grouping is with small businesses. Yet, most of these contracts, as we will see and discuss later, are for office furniture, a category with lower small business participation than the overall grouping, and with a favored federal supplier as well. Both the overall furniture category and the office furniture category feature rather competitive markets in which PSM initiatives can often be more easily implemented (and for which, in fact, a commodity initiative has already been launched).

Another grouping with a high number of contracts but relatively low spend is metal bars, sheets, and shapes. There were 134 contracts with only 25 contractor ID codes for just \$31 million in spend for this FSG. Most of these contracts were for the four-digit FSC covering structural shapes and nonferrous base metal. There were 74 contracts with only ten contractor ID codes and \$7 million in spend for that FSC. While one-third of the contracts for the broader category were with sole sources and hence might be difficult to consolidate, a smaller proportion of the contracts for the smaller category, as we will see on a later chart, were not.

Having Many Dollars in the Same Federal Supply Class May Indicate Prospective Targets for Leveraging Spend

	FSC	\$s M	# ctr ID codes	% \$s sole srce	# ctrx	% \$s small biz	# PO cds
1	Trucks and truck tractors, wheeled	469	22	42	25	3	6
2	Other ADP & telecommunication services	264	37	0	37	1	6
3	Program management/support services	207	51	6	56	23	6
4	Food services	144	5	0	6	1	3
5	RDTE/tank—automotive—advanced technical development	140	2	96	3	0	1
6	ADP supplies	68	7	0	7	<1	4
7	RDTE/other research & development-basic research	65	25	17	28	75	2
8	Radar equipment, except airborne	63	17	97	30	3	4
9	Armor, personal	60	19	17	26	67	7
10	Maintenance & repair of maintenance & repair shop equipment	59	4	0	4	<1	4
	Other	1,280	2,192	33	3,278	41	17
	Total	2,818	2,297	30	3,473	24	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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18

Examining more specific categories of goods and services can help better identify prospective opportunities for PSM initiatives to improve performance and possibly reduce costs. Here we show four-digit FSCs⁷ (and PSCs) by total Marine Corps spend for them in FY 2004.

The focus on four-digit FSCs also shows a concentration of spend on a few categories. The data above indicate that more than half the DD350 spend by the Marine Corps is in the top ten FSCs/PSCs, and more than two-fifths is in the top five. By contrast, other RAND research shows less than one-fourth of the DD350 spend by the Army is in its top ten categories. Such concentration could help the Marine Corps realize savings from purchasing and supply management initiatives. This is not surprising, given that the other services and DLA purchase many goods on behalf of the Marine Corps.

Many of these categories appear to be in relatively high demand over time. For example, five of the categories shown above—trucks and truck tractors, wheeled; program management and support services; food services; research, development, testing, and evaluation (RDTE) of tank, automotive, and advanced technical developments; and maintenance and repair of maintenance and repair shop equipment—were also among the top categories on which the Marines spent DD350 money in FY 2003.

⁷ The first two digits of the code number identify the group, and the last two digits of the code number identify the classes within each group.

Yet, spend for these commodities may also vary, posing a possible challenge to the implementation of PSM initiatives in any given year. For example, the spend for trucks and truck tractors, wheeled, increased from \$146 million in FY 2003 to \$469 million in FY 2004. The spend for other ADP and telecommunication services, \$264 million in FY 2004, was not even in the top ten in FY 2003. Such variation, perhaps because of ongoing operations in Iraq, can pose challenges to implementing best PSM practices, such as developing long-term contracts and relationships, which the Marine Corps commodity team on information technology is likely seeking.

Other challenges to PSM initiatives are evident in data on contracts, contractor ID codes, sole-source spend, small business spend, and purchase office codes. For example, the \$140 million in spend on RDTE for tank, automotive, and advanced technical developments, accomplished through three contracts by one purchase office code with just two contractor ID codes, is likely as leveraged as it can be.

The comparatively low number of contracts to purchase food services is also noteworthy. Food services are a widespread need that must also be adapted to local tastes. The number of contracts for this category indicates that the Marine Corps has already gained experience consolidating purchases in a manner that presumably allows varying locations to satisfy local needs and preferences.

The spend for program management and support services may warrant more attention. This spend constitutes most of that for professional, administrative, and management support services, as seen on the earlier table of spend by FSGs. The Marine Corps commodity team for professional services may wish to focus much of its effort here, perhaps in reducing the number of purchase office codes associated with these services.

Many Contracts in the Same FSC/PSC May Indicate Prospective Targets for Reducing Transaction Costs

	FSC/PSC	# ctrx	# ctr ID codes	% ctrx sole srce	\$s M	% ctrx small biz	# PO cds
1	Miscellaneous items	172	160	56	44	56	12
2	Office furniture	92	65	7	10	40	13
3	Structural shapes, nonferrous base metal	74	10	12	7	87	2
4	Miscellaneous hardware	72	35	44	5	79	9
5	Miscellaneous communication equipment	60	54	42	8	48	15
6	Program management/support services	56	51	21	207	36	6
7	Miscellaneous vehicular components	52	32	60	18	50	8
8	Other professional services	49	42	18	35	61	6
9	Medical & surgical instruments, equipment & supplies	46	41	39	4	48	5
10	ADP systems development services	42	36	17	50	38	2
	Other	2,863	2,025	39	2430	56	17
	Total	3,473	2,297	39	2818	57	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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19

Large numbers of contracts in an FSC or PSC may also indicate specific prospective areas to improve performance or reduce costs, particularly, as noted earlier, those related to contract administration. Here we review the FSCs/PSCs in which the Marine Corps has the most contracts.⁸

A large number of contracts for similar goods or services might indicate opportunities for contract consolidation. Among the FSCs in which the Marine Corps has the most contracts, there are dozens of contractor ID codes associated with dozens of contracts issued from varying numbers of purchase office codes. Some of these categories may provide opportunities for consolidation of the supply base; of contracts; or, in a few cases (e.g., miscellaneous communication equipment and office furniture, each with more than a dozen purchase office codes associated with them), of purchasers for greater leverage. More generally, reducing the number

⁸ A contract can include more than one FSC or PSC, but each individual transaction can record only one FSC or PSC. A summation of individual contracts for FSCs and PSCs can thus suggest a total number of contracts that exceeds the actual number of contracts as a result of “double counting”—i.e., contracts associated with more than one FSC or PSC. In the chart above, for example, the sum of the number of contracts for the top ten and all other FSCs/PSCs suggests a total of 3,578 contracts rather than the 3,473 in FY 2004 data. There is a similar issue in analysis of sole-source contracts. The DD350 data contain contracts with actions that are coded both as sole-source and competitive contracts, meaning the contracts may be coded as both sole source and competitive. We considered a contract to be sole source if it had at least one sole-source transaction and competitive if it had at least one competitive transaction.

of contracts may allow the Marine Corps to manage an increasing volume of purchases with fewer personnel of appropriate skills.

Some goods and services listed here may require the decentralized approach evident to acquire them. Socioeconomic goals may also affect implementation of new purchasing practices. For example, several contracts may be used to purchase a good or service so as to include both large and small providers of goods and services, and particularly to boost overall purchasing from small businesses.

Some of the FSCs with high numbers of contracts appear to be fairly consistent over time. Seven of the ten FSCs/PSCs on the list above were also among the top ten in FY 2003. (Those not in the top ten in FY 2003 included structural shapes, nonferrous base metal; miscellaneous hardware; and medical and surgical instruments, equipment, and supplies.) Office furniture and miscellaneous items were the two FSCs with the highest number of contracts in both years.

The high number of contracts for miscellaneous items may be worth further investigation. If these 172 contracts for goods and services were coded with more precise information, a spend analysis would be able to provide more information on what the Marine Corps was purchasing. For many of these items, North American Industry Classification System (NAICS) data are available. These data indicate that more than half of the spending for “miscellaneous items” occurred in just four NAICS codes: aircraft manufacturing, engineering services, other management consulting services, and all other miscellaneous manufacturing. The Marine Corps may wish to investigate contracts with NAICS classification but without FSC/PSC codes to determine whether more accurate coding of these contracts is possible. The number of contracts and total spend on “miscellaneous items” increased sharply between FY 2003 and FY 2004. The Marine Corps may wish to investigate such an increase, with a particular focus on why more precise coding was not possible for these items. One reason for such changes may be changing needs in ongoing operations and the need to complete urgent purchases rather than check FSC categorization.

The Marine Corps has already launched initiatives to pursue improvements in purchasing and supply management for some of these commodities. As noted above, there are already commodity teams investigating initiatives for office furniture and professional services. The team for information technology goods and services may help address opportunities for improving performance and reducing costs of ADP systems development services and other ADP and telecommunication services.

Many Buyers Making Similar Purchases May Indicate High Purchasing Costs

	FSC/PSC	# PO cds	# ctrx	# ctr ID cds	\$s M
1	Miscellaneous communication equipment	15	60	54	8
2	Office furniture	13	92	65	10
3	Telephone and telegraph equipment	13	24	24	4
4	Miscellaneous items	12	172	160	44
5	ADP software	12	39	39	8
6	Specialized shipping & storage containers	11	23	19	7
7	ADP support equipment	10	30	27	2
8	Cabinets, lockers, bins, and shelving	10	27	25	2
9	Prefabricated and portable buildings	10	19	19	2
10	Miscellaneous hardware	9	72	35	5
	Other	17	3,022	2,034	2,726
	Total	17	3,473	2,297	2,818

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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20

Multiple buyers in the same enterprise buying the same good or service can reduce overall performance and raise costs. Here we show how the Marine Corps procures particular goods and services through many different purchase office codes.

Multiple purchase office codes buying commodities in the same FSC or PSC may indicate that the Marine Corps, by consolidating some of its purchasing efforts, can realize substantial economies of scale and scope at greater efficiencies and lower transaction costs. The costs for researching best suppliers, soliciting bids, selecting from among them, writing and issuing the contract, and managing suppliers can be substantial. Performing the market research necessary to develop expertise in various industries can be time consuming and costly. Thus, dispersing the responsibility for purchasing can lead to inefficiencies and redundant costs in contracting.

The Marine Corps has ten or more purchase office codes using two dozen or more contractors with two dozen or more contractor ID codes in six of the top seven categories listed above (excepting specialized shipping and storage containers). Five of these categories (excepting telephone and telegraph equipment) were among those with the greatest number of purchase office codes in FY 2003 as well. This trend may indicate continuing, widespread need for these goods and services. Although these contracts involve relatively small amounts of money, they may present opportunities to improve performance or realize savings. Such outcomes may be accomplished by attracting and selecting better suppliers; reducing transaction costs; or working with long-term suppliers on continuous improvement and joint collaborative planning, forecasting, and replenishment.

Centralized approaches to purchasing can be tailored to particular needs (Moore et al., 2002). Many private enterprises centralize development of their supply strategies and management of supplier relationships but decentralize their execution (e.g., by placing purchase orders against a central or enterprise-wide agreement that is used by purchasers throughout the enterprise). This is especially true for goods and services that are not related to their primary output. Others, particularly those with diverse businesses, may have the business unit with the most leverage, expertise, or strategic need for the good or service establish an enterprise-wide supplier relationship. Other business units that need the same goods or services from the supplier may also participate in the development and utilization of the agreement.

In some cases, unique local circumstances may demand local purchasing and control. Yet, even in these cases, some centralization and accompanying PSM improvements may be possible. For example, as earlier noted, the Marine Corps has largely centralized its food service requirements in ways that presumably allow each location to devise menus for local tastes and incomes. This strategy could serve as a model for additional Marine Corps purchasing and supply innovations.

There May Be Multiple Opportunities to Improve Purchasing of Some Commodities

	Among top ten FSCs/PSCs ranked by . . .		
FSC/PSC	\$s	Ctrx	PO Cds
Program management and support services	X	X	
Office furniture		X	X
Miscellaneous communications equipment		X	X
Miscellaneous hardware		X	X
Miscellaneous items		X	X

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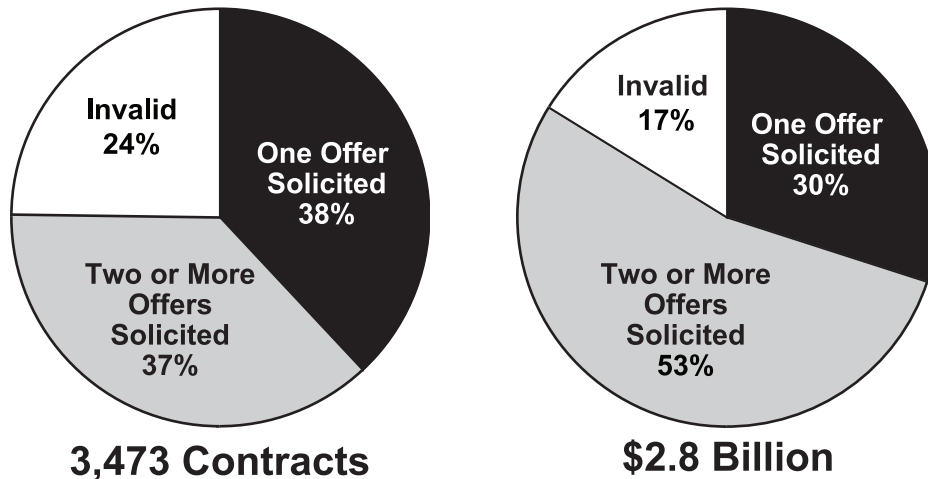
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Many prospective targets appear on more than one list of prospective targets for PSM innovation. Office furniture, miscellaneous communication equipment, miscellaneous hardware, and miscellaneous items, for example, appear among FSCs with the highest number of contracts and the highest number of purchase office codes associated with them. Program management and support services appear among categories with the highest number of contracts and among the highest amount of contractor ID codes.

Efforts to improve overall PSM may best be focused on these categories offering multiple opportunities. Program management and support services may also offer a relatively easy target for consolidating contracts, given the small number of associated purchasing office codes. We later examine more specific indicators for improving purchasing and supply management within a given FSC.

After initial review of spend data compiled by RAND, determination of operational priorities, and determining which efforts to improve PSM were most likely to offer quick benefits, the SPI IPT selected information technology, clothing, and office equipment for its first wave of commodity teams (Simon, 2006). Professional services and maintenance of equipment were included in its second wave of commodity teams.

Sole-Source Solicitations May Limit Contract Leverage Opportunities



SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

NOTE: There were invalid data on 847 solicitations, representing 24 percent of all contracts. These contracts also accounted for 17 percent of all dollars expended through DD350 contracts. Percentages may not add to 100 because of rounding.

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22

Many Marine Corps contracts are for weapons, goods, or services for which only one supplier is judged to have the required capability. These single- or sole-source contracts account for 38 percent of Marine Corps contracts and 30 percent of dollars spent through these contracts.

Without competition or reasonable substitutes, the opportunities for gaining leverage over suppliers providing these weapons, goods, and services may be limited. Suppliers may be reluctant to reduce costs or improve performance if such efforts require investment on their part and if the Marine Corps has no alternative source.

Nevertheless, the Marine Corps may find opportunities for performance improvement and cost savings in sole-source contracts. Some suppliers may welcome the opportunity to serve their customers better, especially to gain further business or even attract other customers. Consolidating multiple sole-source contracts or negotiating a multiple-year contract with the same sole-source supplier can not only reduce total costs for the buyer and the supplier but also induce suppliers, given a larger volume of assured business and lower administration costs, to offer price breaks. In addition, fewer, larger, longer-term contracts may enable joint collaborative planning, forecasting, and replenishment as well as continuous improvement.

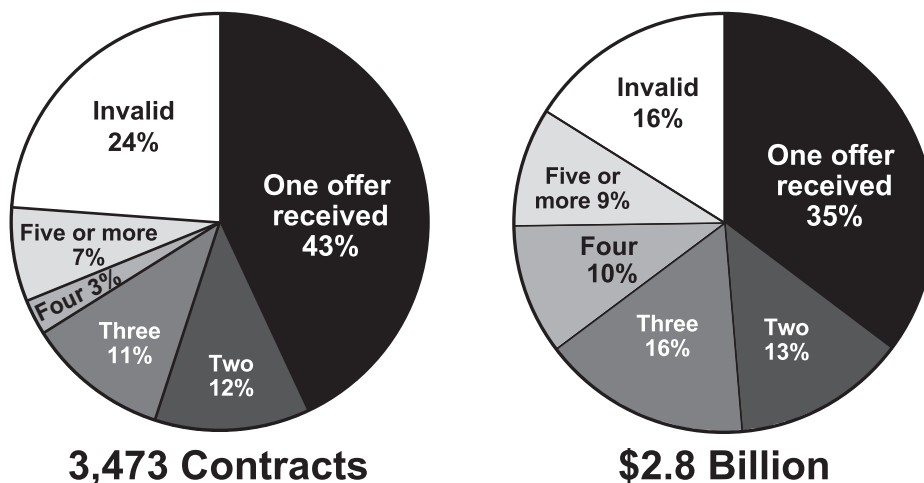
Furthermore, now that acquisition reform permits past performance to be considered in source selection, the Marine Corps may be able to use a firm's interest in bidding for competitive business to encourage better performance on sole-source contracts. In particular, because many defense firms with sole-source contracts also have competitive contracts, the

Marine Corps could use performance on sole-source contracts to award business on competitive contracts.⁹

Data on the number of offers solicited were not available for 24 percent (or 847) of Marine Corps contracts and 17 percent of dollars spent through these DD350 contracts. As for the large number of contracts coded for “miscellaneous items,” faulty coding procedures may be the culprit. Better coding of these contracts may reveal additional opportunities for developing contract leverage or more competitive markets. For purposes of documenting spend by the Marine Corps and identifying prospective PSM initiatives, it is encouraging that the proportion of contracts for which there are invalid data regarding number of offers solicited appears to have decreased between FY 2003 and FY 2004.

⁹ Lockheed Martin, for example, has leveraged its competitive spend to get better terms and conditions on its spend for sole-source contracts (Hannon, 2004).

Number of Offers Received May Indicate Competitiveness of Current Solicitations



SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

NOTE: There were invalid data on 819 solicitations, representing 24 percent of all contracts. These contracts also accounted for 16 percent of all dollars expended through DD350 contracts.

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23

Statistics on the number of offers received show that the markets in which the Marine Corps seeks weapons, goods, and services may have limited competition. This, in turn, may affect the opportunities that the Marine Corps may be able to realize through PSM improvements.¹⁰

Nearly half, or 43 percent, of Marine Corps solicitations for weapons, goods, and services received only one offer. These contracts represented 35 percent of Marine Corps dollars spent on weapons, goods, and services. More than half, or 55 percent, of Marine Corps contracts received no more than two offers. These contracts represented 48 percent of DD350 dollars in FY 2004.

The large proportion of contracts receiving only one or two offers indicates that the Marine Corps may need to seek special ways to purchase weapons, goods, and services in less competitive markets or may need to work on strategies to build competition. Some ways for doing so include undertaking performance-based service acquisition and encouraging continuous improvement by linking performance on all past contracts to selection criteria for new contracts.

Data on the number of offers received were not available for 24 percent of contracts (or 819 solicitations), representing 16 percent of dollars spent through DD350 contracts held by

¹⁰ Alternatively, if market research indicates that several firms offer the good or service but only one bids, then there may be a problem with the original solicitation.

the Marine Corps. The proportion of contracts for which there were invalid data on offers received decreased between FY 2003 and FY 2004. This is an encouraging development for documenting and improving Marine Corps purchasing practices.

Parent Firms with Many Contracts, Purchasers, or Industries May Indicate PSM Targets

Parent Firms w/	%	Avg# (≥2)	Max ^a	Marine Corps Concerns
Multiple contracts	27	4	49	Diluted buying power? Administrative personnel requirements?
Multiple purchase offices codes	16	3	11	High transaction costs? Duplication of effort?
Multiple FSC codes	27	3	28	Contractor's core competencies? – # 1 or 2 in industry? – Investing in improvements?
Multiple NAICS codes	27	3	24	Same as for multiple FSC codes

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

^aContracts: WYLE ELECTRONICS; Purchase Office Codes: XEROX CORPORATION; FSC codes: NORTHROP GRUMMAN CORPORATION; NAICS codes: RAYTHEON COMPANY.

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24

As indicated by data on sole-source solicitations and numbers of offers received to provide a good or service, buyers may also seek to focus efforts to improve performance or reduce costs by examining suppliers in addition to commodities. In particular, buyers may wish to consider the possibilities of PSM initiatives for suppliers holding multiple contracts, with multiple purchasing offices, or in multiple industries.

Contracting inefficiency may occur when a purchaser uses multiple contracts to buy goods and services from the same firm. Each individual contract carries transaction costs for the buyer and the supplier. Having many different contracts (assuming these are separate contracts and not purchase orders written from a master solicitation¹¹) reduces the buyer's power to negotiate price discounts and improvements in delivery or quality. It limits supplier economies of scale or scope as well as other opportunities to reduce supply chain costs.

The data above show that 27 percent of parent firms (or 543 of 2,052) from which the Marine Corps buys weapons, goods, or services have multiple Marine Corps contracts. For firms having more than one contract, the average number of contracts held is four, with one firm, Wyle Electronics, having 49 contracts. (In 2003, UNICOR, also known as Federal Prison

¹¹ In DD350 data, multiple purchases made from a single master solicitation, such as those that the Air Mobility Command uses to purchase air transportation, may appear as multiple contracts. Identifying such purchases would be important for subsequent spend analyses but would also require intensive labor.

Industries, Inc., had 47 contracts, more than any other supplier that year. We later review some characteristics of UNICOR contracts.)

Purchasing through such a high number of contracts may be diluting the buying power of the Marine Corps and forcing it to pay higher prices for these goods and services. It also may lead to higher contract administration costs for buyers and suppliers as well as higher marketing costs for suppliers. Purchasers may find it difficult, and costly, to manage an unnecessarily large number of contracts with the same provider.

Having many purchase office codes associated with the same contract is another indicator of possible inefficiency. Among parent firms with Marine Corps contracts, 16 percent deal with more than one purchase office code. Among contractors dealing with more than one Marine Corps purchase office code, the average number of purchase office codes is three, with Xerox Corporation having contracts with 11 different purchase office codes. (In FY 2003, UNICOR, whose contracts we later examine, also had contracts with 11 different purchase office codes.) When the same contractor has contracts with different offices of the same purchaser, the purchaser may incur indirect marketing costs associated with the contractor selling services to more than one activity office of the purchaser.

Another question to investigate in efforts to improve performance arises when the same contractor sells many different goods or services. Among parent firms selling goods and services to the Marine Corps, 27 percent (or 557 of 2,042) sell weapons, goods, or services associated with more than one FSC or PSC, and 27 percent (or 544 of 2,042) sell weapons, goods, or services encompassing more than one NAICS code. That is, these sellers are providing weapons, goods, and services in multiple industries. Buyers should make sure that a particular supplier has competencies in producing the various goods and services it is providing. Northrop Grumman provides commodities to the Marine Corps from 28 different FSCs or PSCs. Raytheon sold commodities to the Marine Corps in 25 different industries, as identified by the NAICS. Whether these firms, or others selling in a large number of industries, have industry-leading experience and are investing in improvements for all these areas are valid matters for investigation.

Having the Same Supplier^a with Multiple Contracts May Indicate Prospective Leverage Opportunities

	Parent Company Name	# ctrx	# sole srce ctrx	\$s M	% \$ sole srce	# ctr ID cds	# PO cds
1	Wyle Electronics	49	23	2	48	2	2
2	Oshkosh Truck Corporation	35	29	456	48	2	6
3	UNICOR	34	4	2	10	4	9
4	Quality Tooling	34	4	1	9	1	1
5	Northrop Grumman Corporation	32	12	90	10	19	8
6	Agri-Dynamics	32	12	1	36	1	1
7	Clifton Steel Company	28	17	25	99	1	1
8	Raytheon Company	27	19	104	9	15	5
9	General Dynamics Corporation	22	15	226	66	9	7
10	Lockheed Martin Corporation	20	19	69	99	7	4
	Other	3,163	1,198	1,841	20	2,236	17
	Total	3,473	1,352	2,818	30	2,297	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

^a The number of suppliers is a moving target because of ongoing acquisitions, sales, and mergers.

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25

Private-sector firms are significantly reducing the number of contracts they have with the same supplier to reduce transaction costs and leverage their spend in ways that may not have been visible before conducting a spend analysis.¹² Here we examine specific firms with a large number of contracts with the Marine Corps. In addition to showing the number of contracts (# ctrx) for each parent firm, we also show the number of sole-source contracts (# sole srce ctrx) each has.

Ten firms had at least 20 Marine Corps contracts in FY 2004. For half of these firms, the average contract size was less than \$1 million. Consolidation of contracts with these firms may result in better performance as well as lower total costs because larger contracts typically get more attention from suppliers. Consolidation could be limited by requirements for competition, but such rules do not apply where there is only a single source. Eight of the ten firms listed above have at least a dozen sole-source contracts.

The relatively low number of contractor ID or purchase office codes on this list may also indicate relatively easy targets for contract consolidation. Five of the firms listed above have only one or two contractor ID codes, indicating that autonomous business units should not be a problem for contract consolidation. In fact, all of the firms listed above have more contracts than they have business units, indicating some contract consolidation at least by business unit

¹² For example, representatives of one aircraft manufacturer, in an earlier interview with us, reported their firm has one contract with each supplier for all goods and services that supplier provides.

may be possible in all of them. Four of these firms have contracts with only one or two Marine Corps purchase office codes, indicating some contract consolidation by purchaser may be possible as well. In fact, all of the firms listed above have more contracts than the number of purchase office codes they deal with, indicating contract consolidation at least by purchaser may be possible for all of them.

Three firms on this list, Wyle Electronics,¹³ Quality Tooling, and Agri-Dynamics, were considered to be small business concerns in FY 2004. Their presence on this list indicates that federal policies favoring purchases from small businesses need not preclude PSM initiatives such as consolidating contracts. Because many contracts with Wyle Electronics and Agri-Dynamics are sole source, they may provide a relatively easy target for contract consolidation.

Several of the firms listed above not only have a large number of contracts but also deal with a large number of purchase office codes. For example, UNICOR had 34 contracts with nine purchase office codes. In FY 2003, it had 47 contracts with 11 purchase office codes. The reduced number of contracts and purchase office codes may indicate some Marine Corps contract consolidation in FY 2004, particularly as requirements to use UNICOR goods and services were loosened and spend with the enterprise decreased. Such consolidation could help improve performance and reduce administrative costs for UNICOR and the Marine Corps.

Suppliers with multiple contracts are a moving target for PSM initiatives because of ongoing acquisitions, sales, and mergers. The number of contracts for Northrop Grumman, for example, changed after its acquisition of Litton and again after its acquisition of TRW.

¹³ In fact, Wyle Electronics has not been a small business since its acquisition by Arrow Electronics in 2000. Nevertheless, previous statutory language allowed a contractor to remain “small” for several years after outgrowing the small business size standard or merger with or acquisition by a larger company. (For more general discussion of this issue, see Small Business Administration, Office of Inspector General, 2005.) Because the data we use can be considered no more than a “snapshot” of contracting practices at a given time, and because they indicated that Wyle was a “small” business—a designation permitted by statutory language then in effect—we consider Wyle to be a “small” business as well. At the same time, this otherwise anomalous classification indicates conditions change, and data continually need to be updated, cleaned, and verified.

Top Marine Corps Suppliers with Sole-Source Contracts Indicate Prospective Opportunities for Corporate Contracts

	Parent Company Name	Sole source ctrx	% ctrx sole srce	Sole srce \$s M	% \$s sole srce	Ctr IDs	FSCs	# PO cds
1	Oshkosh Truck Corporation	29	83	217	48	2	19	6
2	Wyle Electronics	23	47	1	48	2	9	2
3	Lockheed Martin Corporation	19	95	69	99	7	10	4
4	Raytheon Company	19	70	9	9	15	24	5
5	Aura-Shield, Inc	18	100	<1	100	1	1	1
6	Clifton Steel Company	17	61	25	99	1	6	1
7	Valwest Technologies, Inc	15	79	1	40	1	11	1
8	General Dynamics Corporation	15	68	150	66	9	19	7
9	Marlboro Manufacturing, Inc	12	92	<1	95	1	4	1
10	Harris Corporation	12	75	5	70	2	6	5
	Other	1,173	36	369	19	2,256	650	17
	Total	1,352	39	845	30	2,297	661	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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26

Firms with a large number of sole-source contracts may offer a relatively easy target for consolidation of multiple contracts into a corporate contract for improving performance or reducing costs. Here we rank Marine Corps contractors by the number of sole-source contracts they held in FY 2004. This table also adds variables for the number of dollars that firms received through these sole-source contracts (sole srce \$s M) as well as the number of FSCs (or PSCs) in which they hold these contracts. For most of these firms, sole-source contracts constitute the majority of all Marine Corps contracts, as well as the majority of all Marine Corps dollars spent with them.

Sole-source contracts may afford some consolidation opportunities. Multiple sole-source contracts with the same supplier, for example, perhaps could be consolidated into a single multiple-year contract, reducing total costs for the Marine Corps and the supplier. Four of the firms listed above—Oshkosh, Lockheed Martin, Raytheon, and Valwest—were among the ten firms with the most sole-source contracts in FY 2003 as well. Put another way, the Marine Corps may wish to begin with these firms in consolidating multiple sole-source contracts with the same supplier into a single or fewer multiple-year contracts.¹⁴

¹⁴ While the Competition in Contracting Act requires full and open competition for all federal requirements, the act is not applicable when there is only one source for a commodity. Sole-source contracts with a single supplier could therefore perhaps be consolidated without any need to subject the consolidated contract to competition, though the resulting requirement may be subject to more high-level approval and acquisition processes.

Such efforts also may focus on firms dealing in a relatively low number of FSCs. Of the firms listed above, four provide goods and services in no more than a half dozen FSCs (or PSCs). Eight have a number of sole-source contracts that exceed their number of FSCs.

To be sure, some contracts, such as those for major weapons systems, may not be suitable for consolidation. Contracts may also be difficult to consolidate across FSCs. In addition, contracts coded as sole source may not actually be so. Good market and industry research by commodity teams organized to investigate ways of improving purchasing and supply management for groups of related goods and services will be needed for such investigations. Research is also needed to determine whether a competitive market may become sole source or whether a sole-source market may become competitive. Sole-source classifications can be dynamic, depending on whether a second source enters or leaves the market.

Additional analyses may also be required for consolidating requirements across budget funds. If there are no policies prohibiting mixing different budget types, then there are business reasons why the Marine Corps may wish to consolidate ongoing requirements with new business. For example, Oshkosh, Lockheed Martin, and Valwest—in addition to being among the ten suppliers holding the most Marine Corps sole-source contracts in FY 2003 and FY 2004—also saw their total number of sole-source contracts increase in FY 2004. The Marine Corps may wish to investigate ways to combine such new purchases more efficiently.

Leverage Opportunities Are Affected by Dollars and Share of Sales That Corporations^a Receive from the USMC

	Parent Company Name	Marine Corps \$s M	% \$s sole srce	# ctrx	% ctrx sole srce	# PO cds	# FSC cds	# Ctr ID cds	% total sales to USMC
1	Oshkosh Truck Corporation	456	48	35	83	6	19	2	20
2	Electronic Data Systems Corporation	260	0	1	0	1	1	1	1
3	General Dynamics Corporation	226	66	22	68	7	19	9	1
4	Sodexo Alliance ^b	143	0	2	0	2	1	1	1
5	Raytheon Company	104	9	27	70	5	24	15	1
6	Northrop Grumman Corporation	90	10	32	38	8	28	19	<1
7	Lockheed Martin Corporation	69	99	20	95	4	10	7	<<1
8	Honeywell International, Inc	59	<1	5	80	2	7	4	<<1
9	WPP Group PLC	42	0	1	0	1	1	1	NA
10	TCOM L.P.	38	0	1	0	1	1	1	NA
	Other	1,331	30	3,329	38	17	648	2,237	NA
	Total	2,818	30	3,473	39	17	661	2,297	NA

SOURCE: FY04 DoD-wide DD350 data Marine Corps.

NOTE: NA is *not applicable*.^a These are hard to track because of ongoing acquisitions, sales, and mergers.^b Data are for the fiscal year ending August 31, 2004.

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27

Here we rank the largest Marine Corps contractors by spend in FY 2004 and discuss some of the issues that a spend analysis suggests for them. The percentage of all firm sales that were to the Marine Corps is listed in the right-most column (% total sales to USMC).

Perhaps not surprisingly, there is consistency in this list over time. Seven of the firms shown above—all but Electronic Data Systems, Lockheed Martin, and TCOM—were also among the largest Marine Corps contractors by DD350 spend in FY 2003.

The high number of contracts for some firms listed above might be a good subject for further investigation. In its ongoing PSM initiatives, the Marine Corps could perhaps expect savings from consolidating some of these contracts into larger ones. Companies with a large number of contracts may also want to reduce their own transaction costs for negotiating and managing all these separate contracts.

The total volume of sales that the Marine Corps has with these firms provides it with some leverage over them. At the same time, the small Marine Corps percentage of total sales by these firms—at only one firm on this list for which data are available does the Marine Corps account for more than 1 percent of sales—limits the leverage opportunities the Marine Corps can expect. Firms with a low percentage of sales to the Marine Corps may be less responsive to its needs, because they can turn to other customers as alternatives. Nevertheless, as we will discuss, in some of these cases other military services may have leverage they could exercise on behalf of all of DoD.

For some firms, the distribution of contracts across different purchase office codes and industrial sectors may limit consolidation opportunities. For example, six firms listed above sell goods or services in ten or more FSCs or PSCs. Some industries may be more amenable to contract consolidation than others. Contracts for some services, for example, may be easier to consolidate than those for advanced weapon systems.

The initial analysis of data can lead to further questions for PSM initiatives. For example, do the companies listed above maintain a “core competency” in many different areas? Does the diversity of goods and services they offer merit further examination to ensure that the Marine Corps is relying on firms best able to provide a particular good or service?

The Marine Corps Is Not the Largest DoD Customer for Many of Its Top Suppliers

	Parent Company Name	Contract \$s (M)							% of sales to DoD
		Marine Corps	Army	Navy	Air Force	DLA	Other	DoD total	
1	Oshkosh Truck Corporation	456	514	<1	2	52	0	1,024	45
2	Electronic Data Systems Corporation	260	24	1,037	50	5	162	1,538	7
3	General Dynamics Corporation	226	2,146	6,005	962	22	203	9,563	50
4	Sodexho Alliance	143	<1	<1	3	31	0	177	1
5	Raytheon Company	104	2,053	4,082	1,832	46	356	8,473	43
6	Northrop Grumman Corporation	90	1,608	4,525	4,878	64	729	11,894	41
7	Lockheed Martin Corporation	69	2,837	6,598	10,966	33	187	20,691	60
8	Honeywell International, Inc	59	674	141	445	88	56	1,463	6
9	WPP Group PLC	42	<1	0	0	0	<1	43	NA
10	TCOM L.P.	38	0	0	0	0	0	38	NA
	All companies	1,487	9,856	22,389	19,135	342	1,695	54,904	NA

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.
NOTE: NA is *not applicable*.

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28

Here we show some characteristics of other DoD customers of the largest suppliers to the Marine Corps. In addition to showing the total sales, in millions of dollars, through DD350 contracts in FY 2004 by these firms to the Army, Navy, Air Force, DLA, and other defense agencies, this table shows the total sales by firms to DoD (DoD total) and the percentage of its sales (through DD350 contracts) to DoD (% of sales to DoD). Highlighted cells indicate the leading DoD customer for each firm.

Among the top ten suppliers to the Marine Corps, the Marine Corps itself is the largest DoD customer of just three: Sodexho Alliance, WPP Group, and TCOM. For these suppliers, the Marine Corps may wish to lead efforts to increase overall DoD leverage. For other leading suppliers, the Marine Corps may wish to partner with the leadership of other DoD services in efforts to improve PSM practices.

Leading DoD customers by firm tend to remain so over time. For the seven firms listed above that were also among the top ten Marine Corps suppliers in FY 2003, the service that was the leading DoD purchaser in FY 2004 was the same as that in FY 2003. At the same time, purchasing patterns can change. The Marine Corps share of DoD purchases from Oshkosh, for example, increased from 8 percent in FY 2003 to 20 percent in FY 2004. This increase was in great part because Marine Corps purchases from Oshkosh increased from \$161 million to \$456 million. We will later examine, for more years, Oshkosh purchases by service and agency.

Firms May Present Multiple Opportunities for PSM Improvements

	Among top ten FSCs/PSCs ranked by . . .		
Parent Company Name	\$s	Ctrx	Sole srce ctrx
Clifton Steel Company		X	X
General Dynamics Corporation	X	X	X
Lockheed Martin Corporation	X	X	X
Northrop Grumman Corporation	X	X	
Oshkosh Truck Corporation	X	X	X
Raytheon Company	X	X	X
Wyle Electronics		X	X

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29

Many firms appear on more than one list of prospective targets for PSM innovation. Five firms listed above—General Dynamics, Lockheed Martin, Northrop Grumman, Oshkosh, and Raytheon—are among the firms both receiving the largest number of dollars from the Marine Corps as well as those holding the most DD350 contracts with it. Six firms listed above—all but Northrop Grumman—are among the firms with both the highest number of contracts and the highest number of sole-source contracts.

As noted, larger contracts typically get more attention from suppliers. Consolidation of contracts with these firms may result in better performance at lower cost by yielding economies of scale or scope, reducing transaction costs, or better leveraging spending. In addition, as mentioned earlier, fewer, larger, longer-term contracts can enable continuous improvement as well as joint collaborative planning, forecasting, and replenishment. Consolidation could be limited by requirements for competition, but such rules do not apply when there is only a single source.

The Marine Corps Had Many Short-Term Supplier Relationships from 1997 to 2004

# Years	# Contractor ID codes in consecutive years	# Contractor ID codes in nonconsecutive years	Total	% spend
1	0	3,203	3,203	7
2	584	317	901	11
3	234	206	440	11
4	118	129	247	16
5	82	73	155	9
6	59	44	103	9
7	30	15	45	20
8	46	0	46	17
Total	1,153	3,987	5,140	100

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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30

One way the Marine Corps may seek to improve its purchasing and supply management by commodity and supplier is to reduce its contract “churn,” or turnover, for both. Reducing churn and developing more strategic relationships can lead to improved performance and reduced costs.

Here we examine churn among suppliers. Of the 5,140 contractor ID codes that appear in DD350 data for the Marine Corps between FY 1997 and FY 2004, only 46, or 0.9 percent, appear in all eight years. Most, or 62 percent, appear in only one year, accounting for 7 percent of Marine Corps spend during this period.¹⁵ Whether there should be so many suppliers associated with such a small proportion of spend is a question worth further consideration, especially if the Marine Corps desires more strategic relationships with fewer suppliers.

A large number of contractors also appear in more than one year but not in consecutive years, likely precluding the development of long-term relationships with the Marine Corps. The resulting frequent contract bidding can affect quality, delivery, and costs. Short-term contracts often discourage suppliers from investing in performance improvements, because the payback period may exceed contract length or otherwise be too short to cover investment and other costs. They also discourage suppliers from developing and implementing such quality and pro-

¹⁵ This statistic may underestimate the contracts that are less than a year in length because it is based on contract transactions by fiscal year. Contracts of a year or less often span fiscal years and can have DD350 transactions in two fiscal years.

cess improvement practices as Total Quality Management, statistical process control, or Six Sigma;¹⁶ from training workers in these practices; and from investing in process integration.

Frequent contract bidding also requires more new suppliers to learn specific contract requirements and interpret contract specification or work scope—activities that can affect both cost and performance. Short-term suppliers are not as likely to view the Marine Corps as a priority customer. Rather, they are more likely to put the Marine Corps at the bottom of their lists of preferred customers, quote it higher prices, and give it poorer performance (e.g., longer wait time for orders) than their best customers. By contrast, larger or more regular customers, especially those who are recognized as such, are more likely to get better performance and service, much like those that airlines provide to their most frequent and preferred customers.

Many of these contracts are for goods and services used or installed at multiple Marine Corps installations. Having fewer contractors with longer terms might make it easier to ensure security at these facilities. For example, if goods or services are provided on-site, requiring the contractor to visit the facility, it may be better, for security purposes, to reduce turnover of personnel with access to the facility.

Still, much of the spending during this period was associated with suppliers who have long-term relationships with the Marine Corps. More than half of the DD350 dollars spent in this period was with suppliers who had Marine Corps contracts for at least five of seven years. Efforts to develop longer contracts and their benefits should take care to mitigate risks of poor performance or changes in marketplace competition.

¹⁶ For more on Total Quality Management, statistical process control, and Six Sigma, see, for example, George and Weimerskirch, 1994; and Pande, Neuman, and Cavanagh, 2000.

The Marine Corps Had Many Short-Term Contracts from 1997 to 2004

# Years	# Contracts in consecutive years	# Contracts in nonconsecutive years	Total	% spend
1	0	7,804	7,804	19
2	658	167	825	18
3	270	106	376	12
4	116	69	185	21
5	78	37	115	8
6	44	14	58	9
7	14	6	20	9
8	13	0	13	5
Total	1,193	8,203	9,396	100

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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31

Just as the Marine Corps has contractors who work for it on a relatively short-term basis, it also has many short-term contracts. Of 9,396 contracts between FY 1997 and FY 2004 that we analyzed, 7,804, or 83 percent, had transactions in only one fiscal year of this period.¹⁷ These contracts represented only 19 percent of Marine Corps spend in this period. Put another way, these data may indicate that, in previous years, the Marine Corps was expending a disproportionate amount of its contracting administration efforts on a relatively small portion of its spend.

As shown previously, the Marine Corps has more contracts (3,473) than contractor ID codes (2,297), meaning it has many contractor ID codes with multiple contracts. Many of these contracts are for one year or less. The Marine Corps has a relatively small number of long-term contracts. All these contracts indicate a large workload for personnel to research, solicit, negotiate, contract, and then manage suppliers and their contracts.

¹⁷ One reason for these short-term contracts is that federal regulations, with few exceptions, limit contract length. The Service Contract Act limits contract length to five years, and the Federal Acquisition Regulations note, "Unless otherwise approved in accordance with agency procedures, the total of the basic and option periods shall not exceed 5 years in the case of services, and the total of the basic and option quantities shall not exceed the requirement for 5 years in the case of supplies" (Part 17.204, paragraph e). Relatively few Marine Corps contracts, however, continue for more than one year, much less up to five years. Furthermore, the above data may underestimate the proportion of contracts that are one year in length, given that, as noted, contracts less than one year in length but spanning two fiscal years would appear above as being two years in length. It may also overestimate if more recent contracts are longer term.

Ongoing PSM initiatives by the Marine Corps could lead to lower total costs achieved through more long-term, strategic relationships with fewer suppliers. The Marine Corps may also expect such new practices to reduce the workload on the personnel it needs to develop and manage contracts, making such personnel available for other activities.

Insights on Direct Purchases by Specific Commodities and Suppliers

Outline

Overview of spend analysis

General opportunities for the Marine Corps to improve direct purchasing practices

Insights on direct purchases by the Marine Corps of specific commodities and suppliers

DLA spending on behalf of the Marine Corps

Lessons for the Marine Corps

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32

The analyses of the last chapter focused on commodities and suppliers across the Marine Corps. To fully realize the benefits of a spend analysis, an enterprise must move beyond such broad analyses to more detailed analysis of individual commodities and suppliers. In this chapter, we examine specific examples of supplier and commodity analysis, providing insights on the information offered by such detailed analysis as well as on some of the opportunities the Marine Corps can expect as it pursues PSM improvement while maintaining policy (e.g., socioeconomic) goals.

What the Marine Corps Can Learn from Corporate Analyses of Spend Data

- **Total spend and percentage of sales with specific firms**
 - **Requires additional data linking contracts to parent firm and financial data**
- **Sole-source contracts for possible consolidations within contractor ID codes or parent firm**
 - **Actual consolidations require additional knowledge, including**
 - **degree of independence between divisions**
 - **best terms, conditions, and consolidation practices for different industries**
 - **specific user requirements**

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33

We earlier reviewed some of the opportunities the Marine Corps can expect through analyses of suppliers, including those related to the total spend the Marine Corps may have with a firm and the consolidation possibilities it might expect to find in sole-source contracts. Complete analysis of a firm would require additional data linking individual contracts and contractor ID numbers to parent firms. It would also require company financial data, often available from the Securities and Exchange Commission for publicly traded companies. Contract consolidation would require knowledge of the organizational structure of suppliers, market research on the best terms and conditions within specific industries, and user requirements that may either require or prevent consolidation.

The following analyses of purchasing actions with two leading suppliers illustrate still other issues the Marine Corps may wish to consider in its PSM initiatives. For these firms, we consider characteristics of DoD purchases by service and agency, products that each supplier sells, and trends in purchases from each supplier over time. Rather than critiquing these firms' performance for the Marine Corps, we attempt to highlight some of the specific questions that these more detailed spend analyses can raise.

Marine Corps and DoD Contracts with UNICOR in FY 2004

	Marine Corps	Army	Navy	Air Force	DLA	ODAs	Total
Contracts							
#	34	1,080	119	94	94	24	1,443
\$s M	2	183	7	6	150	1	349
Sole source							
#	4	63	19	13	3	6	107
\$s K	227	4,011	435	488	128	406	5,694
# PO cds	9	130	50	41	6	13	249
# FSC cds	9	71	23	10	24	5	96
# Ctr ID cds	4	14	10	6	6	4	19

SOURCE: DoD-wide DD350 data assigned to buyer by transactions, Marine Corps.

NOTES: Rows may not sum because of rounding and purchases off the same contract. ODAs = other defense agencies.

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34

Here we provide data on DoD purchases from UNICOR, the supplier who held more Marine Corps contracts than any other except Wyle Electronics and Oshkosh Truck Corporation in FY 2004 (and more than any other enterprise in FY 2003).¹ Because the Marine Corps has a high number of DD350 contracts with it, UNICOR is a logical place to consider benefits that may be realized through contract consolidation.

Established in 1934, UNICOR is a self-supporting, wholly owned government corporation associated with the Federal Bureau of Prisons. It employs federal prisoners to produce goods and services ranging from clothing to electronics to vehicle components to assembly and packing services to office furniture. Federal policy requires procurement of UNICOR products if, at the “unilateral determination . . . of the contracting officer,” they are “comparable to supplies available from the private sector that best meet the Government’s needs in terms of price, quality, and time of delivery.”²

As mentioned previously, consolidating a high number of contracts with a firm can help improve performance and reduce transaction costs. While the Marine Corps has a relatively high number of contracts with UNICOR, in fact, the other services and DLA have far higher

¹ Because more than one purchase office from more than one service or agency may use a contract, the sum of contracts by service or agency may exceed the total throughout the DoD, as may the sum of purchase office, FSC, or contractor ID codes associated with these contracts.

² See U.S. General Services Administration, Office of Citizen Services and Communications, n.d.

numbers of contracts with it. Therefore, in seeking PSM innovations with UNICOR, the Marine Corps may want to partner with other DoD purchasers, although the desirability of doing so may vary by commodity.

FSC Codes with UNICOR Contracts in FY 2004 Ranked by Dollars

	FSC	\$s K	# ctrx	% DoD \$s UNICOR	% DoD UNICOR ctrx
1	Office furniture	1,213	23	5	3
2	Household furniture	612	2	43	9
3	Household furnishings	236	3	2	4
4	Diesel engines and components	122	2	100	100
5	Maintenance & repair of equipment/ vehicular equipment components	70	1	100	100
6	Specialized shipping & storage containers	54	1	100	100
7	Maintenance/restoration activities	43	1	100	100
8	Cabinets, lockers, bins, and shelving	25	1	4	3
9	Miscellaneous items	7	1	<1	2
	Total	2,382	34	6	4

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

NOTE: Totals do not sum because some contracts may be in more than one FSC.

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35

Here we show the commodities that the Marine Corps purchases from UNICOR, including the thousands of dollars (\$s K) spent on and the number of contracts for them, as well as the Marine Corps percentages of all DD350 dollars (% DoD \$s UNICOR) and contracts (% DoD UNICOR ctrx) for each. Of the 34 Marine Corps contracts with UNICOR in FY 2004, 23 were for office furniture. For this commodity, however, Marine Corps contracts were only 3 percent of DoD contracts, and Marine Corps dollars were only 5 percent of DoD dollars.

For other commodities, the Marine Corps is a leading DoD purchaser from UNICOR. For household furniture, for example, the \$612,000 the Marine Corps spent through three contracts comprised 43 percent of all DoD purchases. (The Army accounted for 56 percent of purchases of this commodity from UNICOR, while the Navy accounted for 2 percent.) The relatively low number of contracts that the Marine Corps uses for this commodity may indicate it has lessons to offer others on contract consolidation with UNICOR.

For commodities (e.g., diesel engines and components) on which the Marine Corps is the sole purchaser from UNICOR, it may wish to choose one of two options. First, it could establish a DoD-wide contract to cover all future purchases with UNICOR for the commodity, thus increasing DoD leverage for the UNICOR supply of it. Second, the Marine Corps could assess more data to determine whether these requirements currently fulfilled through UNICOR could be consolidated in a way to increase leverage with it or another supplier.

History of DoD Contracts with UNICOR, FY 1997 to FY 2004

	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Total								
# ctrx	754	987	1,053	963	966	1,155	1,492	1,443
\$s M	152	168	245	189	233	256	332	349
USMC								
# ctrx	18	32	62	71	50	62	47	34
\$s M	2	2	3	8	3	4	3	2
Army								
# ctrx	308	449	411	406	482	737	1,043	1,080
\$s M	42	68	110	84	93	68	111	183
AF								
# ctrx	237	236	285	244	211	149	149	94
\$s M	18	20	28	24	18	22	9	6
Navy								
# ctrx	60	70	77	92	76	67	101	119
\$s M	5	5	5	9	8	17	4	7
DLA								
# ctrx	122	175	181	112	125	121	125	94
\$s M	83	70	96	61	109	143	201	150
ODAs								
# ctrx	11	26	37	39	25	22	28	24
\$s M	1	2	3	3	1	2	3	1

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.
NOTE: ODAs = other defense agencies.

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36

As noted, UNICOR is a required source for federal agencies seeking goods of the types it manufactures, although contracting officers can acquire these elsewhere if they determine other sources have better prices, quality, or timeliness of delivery.

Use of UNICOR has increased unevenly in recent years. The Army or the DLA has been the largest DoD purchaser of UNICOR goods and services in each of the eight years shown. As a result, the Marine Corps, in seeking general improvement in purchasing and supply management of the goods it procures from UNICOR, may wish to partner with the Army or DLA. It may wish to do so especially for office furniture, a product for which other RAND research has shown the Army to be the single largest DoD purchaser.

Marine Corps and DoD Contracts with Oshkosh in FY 2004

	Marine Corps	Army	Navy	Air Force	DLA	Total
Contracts						
#	35	111	5	6	48	202
\$s M	456	514	<1	2	52	1,024
Sole source						
#	29	76	2	2	5	114
\$s M	217	473	<1	1	7	699
# PO cds	6	26	3	4	4	43
# FSC cds	19	53	5	6	31	78
# Ctr ID cds	2	2	1	2	2	2

SOURCE: DoD-wide DD350 data assigned to buyer by transactions, Marine Corps.

NOTE: Totals may not sum because of rounding and purchases off the same contract.

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37

Here we provide data on DoD purchases from Oshkosh Truck Corporation, the supplier that received more Marine Corps DD350 dollars than any other in FY 2004. Founded in 1917, Oshkosh manufactures specialty trucks and truck bodies for defense and other uses.

Because the Marine Corps spends more money with it than with any other supplier, Oshkosh is a logical consideration for leverage possibilities, both across commodities and across the DoD. The Marine Corps is also a key Oshkosh customer, accounting, as previously noted, for 20 percent of the company's sales in 2004.

As previously noted, Marine Corps purchases on DD350 contracts from Oshkosh increased sharply in FY 2004. The firm received still more money, \$514 million, from the Army. This suggests that, for any PSM initiatives it launches with Oshkosh, the Marine Corps may want to partner with the Army, particularly for commodities that are common in both services.

Top FSC Codes with Multiple Oshkosh Contracts in FY 2004

	Federal Supply Class	# USMC ctrx	\$s M	% ctrx compet.	% DoD Oshkosh ctrx	% \$s compet.	% DoD \$s Oshkosh
1	Miscellaneous vehicular components	10	12	10	38	1	90
2	Trucks and truck tractors, wheeled	5	437	40	45	55	61
3	Modification of equipment/vehicles, trailers & cycles	3	2	0	100	0	100
4	Vehicular cab, body, frame structural components	3	(<1)	33	27	(49)	(<1)
5	Maintenance & repair of equipment/vehicles, trailers & cycles	2	3	50	67	1	100
6	Hardware, weapon system	2	<1	50	100	15	100
7	Plate, sheet, strip, foil; iron and steel	1	1	0	100	0	100
8	Bearings, plain, unmounted	1	<1	0	17	0	85
9	Batteries, rechargeable	1	<1	0	100	0	100
10	Vehicular furniture and accessories	1	<1	0	8	0	1
	Total	35	456		34		57

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

NOTE: Totals do not sum because some contracts may be in more than one FSC.

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38

Of the \$456 million the Marine Corps spent with Oshkosh in FY 2004, \$437 million was for trucks and truck tractors, wheeled. For this commodity, Marine Corps purchases were 45 percent of all DoD purchases. In FY 2003, the Marine Corps spent \$143 million on this commodity, comprising 18 percent of DoD spend on it. For nearly every other commodity that the Marine Corps purchases from Oshkosh, it is also the leading DoD purchaser. The Marine Corps is therefore likely best positioned to lead DoD efforts for PSM improvements of these commodities from Oshkosh.

History of DoD Contracts with Oshkosh, FY 1996 to FY 2004

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Total									
# ctrx	33	43	48	39	53	62	65	126	202
\$s M	188	205	137	253	372	558	602	650	1,024
USMC									
# ctrx	2	0	2	1	6	12	11	15	35
\$s M	<1	0	<1	(4)	2	50	333	161	456
Army									
# ctrx	20	22	31	31	30	32	33	85	111
\$s M	179	197	133	252	356	492	240	439	514
AF									
# ctrx	2	3	1	0	1	1	3	4	6
\$s M	<1	<1	<1	0	<1	<1	<1	<1	2
Navy									
# ctrx	0	0	0	0	1	2	2	4	5
\$s M	0	0	0	0	<1	<1	<1	<1	<1
DLA									
# ctrx	9	18	14	7	15	17	17	20	48
\$s M	8	8	4	4	15	15	28	50	52

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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39

Overall DoD purchases, as measured in then-year dollars, from Oshkosh have grown each year since 1998. Marine Corps DD350 purchases in particular rose sharply after FY 2001 and comprised most DoD purchases from Oshkosh in FY 2002. Army DD350 purchases comprised most DoD purchases in every other year between 1996 and 2004, which reinforces the importance for the Marine Corps to partner with the Army in seeking general PSM improvements on Oshkosh goods and services. At the same time, the Marine Corps should lead DoD efforts for commodities on which it is the leading producer, and perhaps also those for which its need is rapidly increasing.

What the Marine Corps Can Learn from Commodity Analyses of Spend Data

- **Potential opportunities for contract consolidation within and across**
 - Purchasing offices
 - Commodity groups (e.g., FSCs and PSCs)
 - DoD
- **Competitiveness of market to assess opportunities for exerting leverage to get improved performance**
- **Benefits of applying best PSM practices to selected sourcing commodity groups by benchmarking, where possible, against innovative practices**

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40

Our earlier review discussion also noted some of the opportunities the Marine Corps can expect through analysis of commodities, including consolidation of contracts by goods and services and assessments of market competitiveness. If many purchase office codes are for purchasing the same commodity, or if there are many separate contracts for the same commodity, the Marine Corps may be able to consolidate these purchases into fewer contracts and benefit from leverage with its suppliers and reduce its total costs as well. Economies of scope may also be available from consolidating contracts across the Marine Corps and the FSCs and PSCs in which it purchases. Data on market competitiveness such as the number of firms with Marine Corps contracts in an industry can indicate its competitiveness—critical information for assessing opportunities for exerting leverage to gain improved performance.

Data on the benefits of applying best PSM practices to selected sourcing category groups may be obtained by benchmarking current Marine Corps practices and results against purchasing practices of the most innovative firms. Leading private-sector firms typically buy goods and services by related commodity groups or subgroups. (FSCs and PSCs may not always reflect ideal commodity groupings for purchasing innovations.) Much information on best practices for grouping commodities and measuring improvements in purchasing and supply management is available publicly.³ The benefits to the DoD may not match the experience of the most

³ For example, see benchmarking studies at the Web site of the Center for Advanced Purchasing Studies (CAPS) Research.

innovative firms, however, because of differing goals as well as legal and policy constraints in the military.

In the subsequent charts, we examine some specific issues DD350 data may help illustrate regarding two specific commodities. Although these cannot help illustrate all the issues of contract consolidation, competitiveness, and benchmarking that the Marine Corps needs to consider for these commodities, they do illustrate some and help demonstrate other issues requiring further analysis.

The Army Buys More Miscellaneous Vehicular Components Than the Marine Corps

	Marine Corps	Army	Navy	Air Force	DLA	ODAs	Total
Contracts							
#	52	483	26	35	265	4	861
\$s M	17	65	1	2	19	<1	104
Sole source							
#	31	157	13	2	14	2	219
\$s M	15	22	1	(1)	1	<1	37
# PO cds	8	96	17	22	1	2	146
# Ctr ID cds	32	319	26	31	129	3	488
Small Biz							
#	26	301	20	18	201	3	566
\$s M	3	29	<1	3	14	<1	50

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

NOTES: Totals may not sum because of rounding. The number of purchase office and contractor ID codes does not sum because some purchase offices buy off contracts written by another agency and some contractor ID codes provide goods or services to more than one service or agency. ODAs = other defense agencies.

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41

Here we show DoD contracts and dollars for miscellaneous vehicular components in FY 2004. Such commodity analyses can indicate potential opportunities for contract consolidation within and across purchasing offices and the DoD.

Miscellaneous vehicular components were among the FSCs for which the Marine Corps had the highest number of contracts in FY 2003 and FY 2004. It is a fairly common need throughout the Marine Corps. In FY 2003 and FY 2004, eight purchase office codes issued contracts for this commodity.

The number of Marine Corps contracts for this commodity, 52, was only a small fraction of the 861 contracts across the DoD. The Army, with 483 contracts for \$65 million, and DLA, with 265 contracts for \$19 million, both had more contracts and expenditures for this commodity. Accordingly, the Marine Corps should likely partner with the Army and DLA to improve purchasing and supply management for it, although there are two caveats to this recommendation. First, the Marine Corps needs more sole-source miscellaneous vehicular parts than others in the DoD, as demonstrated by the high proportion of its spend (\$15 million of a total of \$17 million) on sole-source contracts. Second, purchasing leadership for this commodity varies by specific supplier.

Top Five Marine Corps and DoD Suppliers by Dollars for Miscellaneous Vehicular Components in FY04

USMC	Parent Company Name	\$s M	# ctrx	# ctrx sole srce	% \$ sole srce	% Total FSC \$s
1	Oshkosh Truck Corporation	12	10	9	99	69
2	Advanced Vehicle Systems, Inc	1	8	6	68	8
3	W.W. Williams	1	2	1	57	4
4	Tailored Logistics Corp	<1	1	0	0	3
5	The Renco Group, Inc	<1	1	1	100	2
	Other	2	30	0	0	14
	Total	17	52			100
DoD						
1	Oshkosh Truck Corporation	13	26	20	99	13
2	Alcoa Extrusions, Inc	8	1	0	0	8
3	General Dynamics Corporation	7	11	7	97	7
4	UNICOR /Federal Prison Industries	6	13	0	0	6
5	Mile Marker International, Inc	6	7	3	2	6
	Other	64	803	0	0	62
	Total	104	861			100

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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42

DoD leadership in purchasing miscellaneous vehicular components varies by specific supplier. Here we show firms with which the Marine Corps and DoD spent the most for miscellaneous vehicular components in FY 2004.

There is little overlap between top Marine Corps and top DoD suppliers for this commodity. Oshkosh was the top Marine Corps and DoD supplier of this commodity in FY 2004, but other top suppliers differed. In fact, without Marine Corps purchases, Oshkosh would not rank among the top DoD suppliers for this commodity.

The Marine Corps has a less fragmented spend (ten contracts for \$12 million) for this commodity from Oshkosh than does the remainder of the DoD (16 contracts for \$1 million). The Marine Corps spend for miscellaneous vehicular components is also highly concentrated with Oshkosh, with more than two-thirds of its spend for this commodity being with the firm. This concentration suggests that the Marine Corps is best positioned to lead PSM initiatives with Oshkosh for this commodity.

Dominant buyers within an organization can benefit from partnering with others by increasing overall leverage for their organization. They may also benefit should their dominance not last long. Indeed, as we saw earlier, leadership in DoD purchases from Oshkosh has shifted in recent years.

In some circumstances, the Marine Corps may wish to have others exercise leverage on its behalf with specific firms. In FY 2003, for example, one of the top Marine Corps suppliers

for this commodity was General Dynamics, a supplier that others in the DoD use far more for it.

History of Marine Corps and DoD Purchases of Miscellaneous Vehicular Components, FY95–FY04

	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Total										
# ctrx	113	181	183	173	177	184	212	308	526	861
\$s M	53	189	124	132	112	43	32	63	101	104
USMC										
# ctrx	6	9	8	1	5	8	7	8	28	52
\$s M	3	5	14	<1	2	11	15	14	12	17
Army										
# ctrx	67	101	84	78	81	74	74	142	318	483
\$s M	42	175	99	125	102	19	4	33	64	65
AF										
# ctrx	2	7	8	10	11	13	15	21	31	35
\$s M	1	1	<1	1	1	1	2	3	3	2
Navy										
# ctrx	2	6	11	3	4	8	15	14	15	26
\$s M	1	1	1	<1	<1	2	1	5	3	1
DLA										
# ctrx	37	57	71	81	77	81	102	125	135	265
\$s M	6	7	10	6	6	10	10	8	18	19
ODAs										
# ctrx	0	1	1	0	0	0	1	0	2	4
\$s M	0	<1	<1	0	0	0	<1	0	<1	<1

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.
NOTE: ODAs = other defense agencies.

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43

Overall DoD purchases measured in then-year dollars of miscellaneous vehicular components have varied over time, with purchases becoming increasingly fragmented in recent years. Between FY 1998 and FY 2004, the number of contracts for this commodity has increased from 173 to 861, but there was no discernible trend in the dollars spent for it. The irregular purchases and high number of contracts suggest that the Marine Corps should investigate PSM initiatives that can ensure high performance even under varied needs, while helping cut administrative costs for an increasing number of contracts.

In every year except one of those shown above, the Army spent more on this commodity than any other service has, but the Marine Corps and DLA also report significant expenditures on it. Again, these three agencies should likely lead DoD initiatives to improve purchasing and supply management of these goods. They should share leadership in such a way that recognizes the unique needs and suppliers of each but also allows each to learn from the lessons and benefit from the leverage of the others.

The Army Buys More Office Furniture Than the Marine Corps

	Marine Corps	Army	Navy	Air Force	DLA	ODAs	Total
Contracts							
#	92	2,397	406	407	11	87	3,027
\$s M	10	191	39	96	2	9	347
Sole source							
#	6	490	51	43	2	17	608
\$s M	<1	11	1	5	1	1	19
# PO cds	13	213	98	96	6	28	454
# Ctr ID cds	65	1,009	281	295	10	69	1,261
Small Biz							
#	37	1,212	223	198	4	42	1,498
\$s M	6	58	12	31	1	2	111

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

NOTES: Rows may not sum because of rounding. The number of purchase office and contractor ID codes does not sum because some purchase offices buy off contracts written by another agency and some contractor ID codes provide goods or services to more than one service or agency. ODAs = other defense agencies.

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44

Another good for which the Marine Corps may wish to develop a strategic supplier relationship is office furniture. The Marine Corps had more contracts for office furniture than for any other FSC in FY 2003 and more for it than any other FSC except miscellaneous items in FY 2004.

The Marine Corps has a diffuse spend for office furniture, which is not surprising given the universal need for it. In FY 2004, 13 Marine Corps purchase office codes issued 92 contracts for \$10 million in office furniture. Only six Marine Corps contracts for office furniture are sole source, suggesting, in contrast to miscellaneous vehicular components used by the Marine Corps, a highly competitive market for this commodity.

As a whole, the DoD spent \$347 million on DD350 contracts for office furniture in FY 2004. The Army, Air Force, and Navy all spent more on office furniture than the Marine Corps did, suggesting that the Marine Corps should partner with others in developing a supply strategy for this commodity.

In fact, the Navy has already launched a commodity council for furniture and fixtures, in which the Marine Corps participates. This council may be able to offer insights to other services for purchasing office furniture. Office furniture is also part of the Marine Corps's recent Strategic Purchasing Initiative.

The Marine Corps may be able to offer some insight to other services on how to consolidate contracts and implement best PSM practices with small businesses providing this commodity. Of its 92 contracts for office furniture, 37, or 41 percent, are with small businesses,

which include 60 percent of the Marine Corps spend for this commodity. By contrast, of the 2,935 contracts the remainder of the DoD has for this commodity, 1,461, or 50 percent, are with small businesses, representing just 31 percent of the spend for this commodity elsewhere in DoD.

The Top Five Marine Corps and DoD Suppliers by Dollars for Office Furniture in FY 2004

USMC	Contractors	\$s M	# ctrx	# ctrx sole source	% \$ sole source	% Total FSC \$s
1	Omni International, Inc	2	1	0	0	22
2	Furniture by Thurston, Inc	1	2	0	0	12
3	UNICOR /Federal Prison Industries	1	23	2	6	12
4	GF Office Furniture Ltd	1	1	0	0	7
5	Haworth International Ltd	1	2	0	0	6
	Other	4	64	0	0	41
	Total	10	92			100
DoD						
1	UNICOR /Federal Prison Industries	27	766	68	7	8
2	Kimball International, Inc	26	9	0	0	7
3	Steelcase, Inc	25	17	2	<1	7
4	Herman Miller, Inc	24	35	7	<1	7
5	Knoll, Inc	22	10	1	0	6
	Other	223	2,219	0	0	64
	Total	347	3,027			100

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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45

Marine Corps purchases for office furniture are relatively concentrated. In FY 2003 and FY 2004, five firms received most Marine Corps dollars for this commodity, although the specific top firms did change. Only two firms, UNICOR and GF Office Furniture, were among the top five suppliers in both years. Only one firm, UNICOR, was among the top five suppliers for both the Marine Corps and the DoD in FY 2004, although Knoll was among the top five for both in FY 2003. The Marine Corps and DoD use a large number of contracts in proportion to the total dollars each spends with UNICOR, diluting their leverage.

Despite government policies favoring UNICOR, the Marine Corps and DoD purchase most of their office furniture from other providers. One prospective option for managing situations in which suppliers, such as UNICOR, do not meet user requirements is to establish “umbrella” relationships with the best-value providers in the industry. Because office furniture has little technical complexity, an online marketplace might serve purchaser needs while keeping transaction costs low. The ability to post customer feedback online could result in better performance from contractors as they try to build their reputation as quality suppliers. Such approaches may also be helpful for other commodities in competitive markets or in those with statutory requirements for competition.

History of Marine Corps and DoD Purchases of Office Furniture, FY 1995 to FY 2004

	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Total										
# ctrx	878	926	1,075	1,061	1,150	1,005	1,019	1,622	2,450	3,027
\$s M	219	211	204	197	253	209	216	273	345	347
USMC										
# ctrx	30	35	27	42	74	71	51	92	100	92
\$s M	3	5	5	3	7	9	7	12	15	10
Army										
# ctrx	413	486	575	567	511	429	484	1,092	1,761	2,397
\$s M	94	89	112	96	119	77	79	102	147	191
AF										
# ctrx	372	378	426	399	485	397	395	403	492	407
\$s M	87	72	53	59	79	78	92	95	121	96
Navy										
# ctrx	192	158	155	166	196	179	176	192	345	406
\$s M	28	38	24	28	38	29	27	54	49	39
DLA										
# ctrx	22	17	25	20	31	28	34	22	12	11
\$s M	3	2	3	3	2	4	3	5	1	2
ODAs										
# ctrx	36	41	53	60	68	62	56	60	81	87
\$s M	4	5	6	9	8	11	7	5	12	9

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.
NOTE: ODAs = other defense agencies.

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46

Demand for office furniture has grown over time, but the number of contracts used to purchase it has grown even faster. The high number of contracts used to purchase office furniture in the Marine Corps and across DoD suggests a fragmented spend that is contrary to best PSM practices. In FY 2004, the Marine Corps spent \$10 million for office furniture, or about a third more than the \$7 million it spent in FY 2001, but its number of contracts, 92, was nearly double the 51 used earlier. For DoD as a whole, the spend for office furniture increased by more than half, from \$209 million (FY 2001) to \$347 million (FY 2004), but the number of contracts nearly tripled, from 1,005 to 3,027. Again, the Marine Corps and the rest of DoD may benefit from “umbrella” contracts with the best suppliers, which would help improve performance and also reduce contract administration costs.

The Top Marine Corps FSCs by Competitive Contracts

	FSC	# comp ctrx	% comp ctrx	comp \$s M	% comp \$s	# ctr IDs	# PO cds
1	Miscellaneous items	76	44	22	50	160	12
2	Office furniture	66	72	9	88	65	13
3	Structural shapes, nonferrous base metal	65	88	7	95	10	2
4	Program management/support services	45	80	196	95	51	6
5	Miscellaneous hardware	41	57	3	55	35	9
6	Other professional services	40	82	20	58	42	6
7	ADP systems development services	35	83	40	81	36	2
8	Miscellaneous communication equipment	35	58	7	81	54	15
9	Athletic and sporting equipment	31	82	2	90	35	9
10	ADP input/output and storage devices	28	85	7	98	32	9
	Others	1,772	61	1,658	68	2,023	17
	Total	2,122	61	1,970	70	2,297	17

SOURCE: FY04 DoD-wide DD350 data, Marine Corps.

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47

Several other commodities also might be worth examining for contract consolidation and other prospective opportunities for improving purchasing and supply management practices. Office furniture, as noted, was among the commodities with the most competitive contracts in FY 2003 and FY 2004. Other commodity groups with high numbers of competitive contracts in both years included program management and support services, ADP systems development services,⁴ and “other” professional services. In the columns in the above chart, “comp” is competitive and “# ctr IDs” is the total number of contractor identification codes.

Where there is competition in providing a particular commodity or service, contracts cannot legally be consolidated by specific supplier (as sole contracts may be consolidated). Nevertheless, in its PSM innovations, the Marine Corps may find opportunities to award contracts within a single commodity group with suppliers that would fulfill more requirements. The relatively large number of competitive contracts in several FSCs shown above appears to indicate some opportunities for consolidating requirements, although further market research would be needed to determine whether suppliers could fulfill more requirements than they currently do.

Similarly, requirements may be consolidated across related commodity groups. Contracts may, for example, group several categories of ADP goods and services. Such requirement con-

⁴ Two other ADP categories—systems development services and input, output, and storage devices—were among the commodity groups with the most competitive contracts in FY 2003.

consolidation opportunities would necessitate additional industry intelligence and market research to identify them.

The prospective opportunities for PSM initiatives that we have examined so far are those for direct spend by the Marine Corps. These are a logical place to begin, because the Marine Corps has the most control over purchasing and supply management of goods and services that it buys directly. Nevertheless, the Marine Corps acquires most of its goods and services indirectly—through purchases others make on its behalf. We turn next to an analysis of some prospective opportunities for PSM initiatives the Marine Corps may find for purchases on which DLA makes on its behalf.

DLA Spending on Behalf of the Marine Corps

Outline

Overview of spend analysis

Indicators of *prospective* Marine Corps opportunities for applying PSM practices

Insights for the Marine Corps from data it already collects

DLA spending on behalf of the Marine Corps

Lessons for the Marine Corps

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48

USMC direct purchases of weapons, goods, and services constitute less than half of all such purchases by the Marine Corps. In FY 2004, the Marine Corps spent \$3.3 billion on direct purchases of weapons, goods, and services—\$2.8 billion of which are recorded in the DD350 data we have analyzed—but it also spent \$4.3 billion in indirect purchases of goods and services from government and commercial providers.

Little is known about these indirect purchases. Indeed, we are only able to estimate their total. Such intragovernment purchases include fund transfers to other services, DLA, GSA, and TRANSCOM, as well as MIPRs and other materiel requisitions. In this chapter, we review data on DLA purchases for the Marine Corps. As noted earlier, we had planned to

analyze indirect purchases made by the Navy and Army on behalf of the Marine Corps, but changes in DD350 codes for weapon systems prevented us from doing so.

While our focus is on DLA purchases for the Marine Corps, we also discuss DLA purchases for other DoD organizations as well as its general purchasing practices. This broader focus helps demonstrate analyses of suppliers that the Marine Corps would need to undertake in a complete spend analysis. Reviewing similar DLA purchases for other customers, for example, helps show issues that the Marine Corps may wish to consider in managing this particular supplier. Among these issues are innovations in providing goods and services as well as supplier performance incentives and commitment to improve.

We Analyzed a Specially Compiled File of DLA Purchases

- **Many small DLA purchases are not in DD350 files**
- **We therefore analyzed ACF data with greater coverage of transactions less than \$25,000 and those with small businesses**
- **The ACF includes additional data elements, such as**
 - **NSNs**
 - **Indicators of automation and DVD**
- **Some data elements are missing, such as**
 - **Number of solicitations and bids received**
 - **NAICS codes**

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49

Our earlier analysis of USMC direct purchases used DD350 data. As noted, these data include a great deal of useful information on contract purchases, and they are the best currently available data for analyzing aggregate direct spend of the services. Yet, until only recently, they generally lacked contract actions of less than \$25,000.

For analyses of DLA spend, the lack of DD350 data for smaller actions is a serious drawback. In FY 2004, more than 97 percent of DLA contract actions were for less than \$25,000 (Department of Defense, 2005). Given that many best PSM practices seek to reduce the total number of contracts (and hence administrative and related costs), analyzing these smaller purchases is essential to evaluating DLA purchasing and supply management.¹ We therefore considered alternative data with better reporting of smaller transactions.

In addition to DD350 data, the FY 2004 ACF in the SAMMS offers data that may be used for spend analyses. The ACF has data on nearly ten times as many DLA contracts (402,017) as are available in DD350 data (40,860) for FY 2004. However, it does have shortcomings. It includes data on only \$13.1 billion in DLA purchases in FY 2004, considerably less than the \$19.5 billion recorded in DD350 data and the more than \$24 billion in total expenditures DLA had for goods that year. There is a lack of data because certain classes of material were managed by other DLA systems, such as the Defense Integrated Subsistence

¹ Furthermore, while DD350 purchases comprised 86 percent of USMC direct purchases (by dollars), and at least 95 percent of direct purchases by the other services, they comprise only about 81 percent of direct purchases of goods by DLA.

Management system. It also lacks data for NSNs that had initially been migrated to the Business Systems Modernization (BSM) being phased in to replace SAMMS. It also does not have data on NAICS codes nor on the number of solicitations made and bids received, but it does have data indicating whether purchases were made from a sole- or single-source contract. There are some commodity purchases that traditionally have not been recorded in ACF, but there are others for which the ACF appears to offer greater coverage than that available in DD350 data.² It also does not contain data on contracts for services. Nevertheless, for those NSNs that the ACF includes, and for those FSCs for which it has all NSNs, the ACF has data on all contract actions, both those of less than \$25,000 and those of \$25,000 or more. In sum, the ACF provides a better view for this spend analysis of most individual contract actions, although lacking data for some categories of expenditures.

Aside from its utility for analyzing small transactions that constitute the overwhelming majority of DLA contract transactions, the ACF data are also helpful in analyzing transactions from small businesses. Spend analyses that rely on DD350 data may understate the extent of procurement from small businesses, to the extent that a DoD purchaser is likely to have contract transactions of less than \$25,000 with them. In FY 2004, 28 percent of dollars DLA spent through DD350 transactions were with small businesses, compared with 36 percent of dollars it spent through all ACF transactions, and 42 percent it spent through ACF transactions of less than \$25,000.

The specially prepared ACF data that DLA sent to us from the SAMMS contain many variables identical or similar to those in DD350 data, including the number of contracts used to purchase a commodity and the number of purchase offices and contractor identification codes associated with it. The data also encompass some elements particularly helpful for a spend analysis that are not in DD350 data. Among these are NSNs. NSN, or item-level identification data, rather than FSC data are needed for complete spend analyses, particularly for the information they offer regarding contract consolidation.³ Ideally, contracts with a single supplier could include as many individual types of goods, as indicated by NSNs, that a supplier provides to the DoD organization. We examine the number of contracts and NSNs for leading suppliers to DLA of goods used by the Marine Corps.

For each group of commodities we analyze, we also examine the proportion of purchases that were made through automated procurement programs and those that were shipped by direct-vendor delivery (DVD)—i.e., directly from suppliers to the ultimate user. In recent years, DLA has tried to increase automation of contracts, expecting this to minimize the effects of a huge number of contracts on administration costs for the buyer and the supplier. Automation can also help discourage maverick buying by creating a disincentive for buyers writing new contracts. Other prospective benefits from contract automation include reduction

² For example, for DLA purchases of fuel, lubricants, oils, and waxes (FSG 91), DD350 data include \$6.5 billion in purchases, while ACF data include only \$47 million in purchases. For DLA purchases of medical, dental, and veterinary equipment and supplies (FSG 65), ACF data include 14,573 DLA contracts totaling \$3.1 billion while DD350 data include only 593 contracts for \$2.1 billion.

³ A record in the ACF data is a contract action at the NSN level.

in processing time, which could reduce total inventory requirements and thereby total costs of ownership.

Nevertheless, as we will discuss, some parts of the complete purchasing process—e.g., picking, packing, shipping, receipt, and storage—are less amenable to automation than others. As a result, a high number of contracts and transactions may continue to result in higher costs than might be realized from consolidated shipments or transactions. In addition, some nominal processing fees that are passed on to customers can become quite substantial when multiplied by very high numbers of contracts or transactions.

DLA Has a Number of Procurement Programs with Varying Automation

Process steps	Auto solicitation/ PACE	SPEDE	POPS	EPPI	Auto IDPO	ADO
Requirements identification	Customer direct/DLA direct	Customer direct/DLA direct	Customer direct/DLA direct	Customer direct/DLA direct	Customer direct/DLA direct	Customer direct/DLA direct
Requirement qualification	Auto under \$100K if qualifies	Auto under \$25K	Auto	Auto	Auto	Auto
Solicitation/ request for quote	Auto	Auto	Contract in place	Contract in place	Contract in place	Contract in place
Supplier selection	Auto	Auto	Contract in place	Contract in place	Contract in place	Contract in place
Contract award	Auto	Auto	Contract in place	Contract in place	Contract in place	Contract in place

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50

In FY 2004, 42 percent of ACF contracts but 81 percent of ACF actions and 61 percent of ACF dollars were spent through one of several automated systems. These differing automation systems were likely developed by different parts of DLA at different times in a “stovepipe” process.

The two largest of these systems, as measured by dollars handled, are

- Procurement Automated Contract Evaluation (PACE), used for 38.0 percent of contracts, 7.2 percent of contract actions, and 3.7 percent of dollars in the ACF
- Paperless Order Placement System (POPS), used for only 0.9 percent of contracts but 59.2 percent of contract actions and 56.2 percent of dollars in the ACF.

Other systems jointly comprising 3.0 percent of contracts, 15.1 percent of contract actions, and 2.5 percent of dollars in the ACF include

- Electronic Procurement Program Interface (EPPI)
- Small Purchase Electronic Data Exchange (SPEDE)
- Indefinite Delivery Purchase Order (IDPO)
- Automated Delivery Order (ADO).

(No automation system is used for the 58.2 percent of contracts comprising 18.5 percent of actions and 37.5 percent of dollars in the ACF.)

DLA Has a Number of Procurement Programs with Varying Automation—Continued

Process steps	Auto solicitation/ PACE	SPEDE	POPS	EPPI	Auto IDPO	ADO
Order (purchase order/delivery order)	Auto	Auto	Auto	Auto	Auto	Auto
Pick, pack, ship	Vendor	Vendor	Vendor	Vendor	Vendor	Vendor
Transport	Vendor	Vendor	Vendor	Vendor	Vendor	Vendor
Receipt	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD
Store	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD	DLA/ User if DVD
Payment	Auto	Auto	Auto	Auto	Auto	Auto
Supplier evaluation/ measurement	Auto (ABVS)	Auto (ABVS)	Auto (ABVS)	Auto (ABVS)	Auto (ABVS)	Auto (ABVS)

NOTE: ABVS = Automated Best Value System.

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51

For all these programs, we identified steps for delivery and payment of a purchase and then discussed with DLA personnel those that may be automated by different programs. These are summarized in the table above.

The question of automation is important for several reasons. Several FSCs and suppliers have a relatively large number of DLA contracts. As discussed earlier, large numbers of contracts may indicate some need for purchasing and supply management innovation. Automation could perhaps mitigate some of the PSM issues that arise from a large number of contracts.

Yet, the proportion of purchase dollars, contracts, and contract actions that are automated varies widely by commodity, as we will discuss. Furthermore, many steps in these “automated” processes, as highlighted in the table, are not automated. Many steps that are automated may still require some manual work, particularly if some data inputs are rejected. Thus, even “automated” purchases have some transaction costs, although they are smaller than those for manual purchases. For example, Defense Finance and Accounting Service fees in FY 2006 were \$4.30 for DLA commercial payments on automated contracts (and \$22.63 on manual contracts). If processed individually, such fees can become substantial when multiplied by numerous purchases.

Steps for (1) picking, packing, and shipping; (2) transporting; (3) receiving; and (4) storing of orders are also not automated. If each automated contract or contract action results in a separate shipment, then the total cost of a large number of automated contracts could offset the incremental cost savings from the automation (e.g., those associated with lower transac-

tions costs and smaller inventory requirements) for DLA and its customers, such as the Marine Corps. Such cost offsets could be particularly true for purchases from small businesses that lack the bargaining power of larger companies with more regular business with delivery services (Brooks, 2005).

DVD shipments of such orders can perhaps get orders to ultimate customers more quickly. When introducing DVD for consumable items, such as nuts and washers consumed in repairs, DLA personnel noted that delays in expensive repairs could be avoided if such items were made available more quickly. DVD, however, can be costly.⁴ The trade-off between transportation costs for a possibly large number of shipments and reductions in total cost of ownership resulting from DVD (and contract automation) may merit further analysis. In some cases, it may be worth exploring whether aggregation of orders and shipping to a DLA warehouse, from which shipments to individual users could perhaps be made more economically (e.g., through regularly scheduled and consolidated deliveries). For these and other reasons, in subsequent tables we examine the proportion of ACF contracts, actions, and dollars that are purchased through automated orders as well as those that are shipped DVD.

⁴ Transportation costs for items shipped directly to the customer are included in the unit price. Transportation costs for items shipped to DLA distribution centers are also often included in the unit price, but transportation to the customer is paid by DLA to TRANSCOM. Research by Marc Robbins of RAND finds that, in general, there is no obvious cost or performance advantage for organic over DVD for CONUS customers, while there is one on both counts for OCONUS. The potential cost advantage for DLA Direct over DVD for CONUS customers is the ability to exploit any existing slack capacity in trucks (i.e., zero marginal cost for transportation).

Summary of FY 2004 Detailed DLA Purchases with Marine Corps Orders

- **The Marine Corps accounted for \$505M, or 4 percent, of \$13.1B DLA spend in the ACF**
- **DLA spend for goods used at least in part by Marine Corps included**
 - **54,241 contracts**
 - **43 percent sole source**
 - **75 percent with small businesses**
 - **4,153 parent company ID codes**
 - **42,942 NSNs (and manufacturer part numbers)**

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52

Altogether, the ACF shows \$505 million in DLA purchases of goods for the Marine Corps in FY 2004. This represented 4 percent of the total \$13.1 billion DLA spend shown in the ACF. ACF contracts and actions are not designated for any particular service. Rather, we used market share factors provided to us by DLA to determine the value of the goods that the Marine Corps used.⁵ These market share factors allowed us to approximate DLA spend done on behalf of the Marine Corps for those items that other DoD organizations also use.⁶ In discussing ACF contracts for a group of goods or with a particular supplier, we discuss all those that the Marine Corps requisitioned but not necessarily exclusively. USMC market share, where given (i.e., where it was greater than zero), could range up to 100 percent.

⁵ The market share factors were computed by DLA by dividing the number of requisition quantities for a service (e.g., the Marine Corps) or agency by the total number of requisition quantities for a given NSN for the same fiscal year. Foreign military sale or contractor requisition quantities for government-furnished materiel were not included in this calculation. Requisitions for materiel are typically not made at the exact time as the purchase of the materiel. Instead, requisitions may draw materiel from inventory acquired through previous purchases or await fulfillment by future purchases. As a result, requisitions by DLA customers may precede purchases by DLA by some unknown period. Because of the uncertainty in delay, DLA calculations of USMC market-share factors assume purchases made during a fiscal year were related to USMC demand for items during the same fiscal year.

⁶ The \$505 million DLA spend for the Marine Corps resulted from multiplying the market share factor and dollars for each ACF record. The DLA spend analysis considered only those records with nonzero dollars (or nonzero USMC market share factors). The reader should bear in mind that our concern is with the USMC spend, not the entire spend, of these contracts.

In FY 2004, DLA purchased goods used by the Marine Corps through 54,241 contracts. These contracts were issued through four DLA purchasing offices: the Defense Supply Centers in Philadelphia, Pennsylvania; Columbus, Ohio; and Richmond, Virginia; and the Defense Energy Support Center at Fort Belvoir, Virginia. DLA purchases a wide variety of goods for the Marine Corps, including items from 42,942 NSNs in 361 FSCs from 4,153 parent company ID codes and 4,456 contractor ID codes.⁷

Like the DD350 data for USMC purchases, these summary ACF data of DLA purchases for goods used by the Marine Corps point to several prospective challenges, and opportunities, for improving purchasing and supply management practices. Sole-source and single-source contracts account for 43 percent of contracts and 26 percent of dollars for goods that DLA purchases for the Marine Corps. Therefore, DLA is purchasing for the Marine Corps many goods for which there are limited or no possibilities of substitution. Nevertheless, as noted in earlier discussion of direct DD350 purchases by the Marine Corps, DLA may still work for some improvements in purchasing and supply management of these commodities, especially if the supplier is selling other goods and services to it or other DoD agencies.

Three in four, or 75 percent of contracts as well as 44 percent of dollars for ACF goods that DLA purchases for use by the Marine Corps were with small businesses. Many of these purchases, like those that the Marine Corps makes directly, may stem in part from federal goals, currently set at 23 percent of prime contract dollars, for small business procurement. Many of these contracts can likely be consolidated in such a way that maintains current levels of small business purchases.

Because DLA purchases on behalf of the Marine Corps are only a small portion of all DLA purchases for its customers, the Marine Corps will clearly have to partner with other services if it wishes to seek improvements in purchasing and supply management of its DLA commodities. Given this need to partner with other services, the subsequent charts, while presenting the total spent on USMC goods (and on the USMC proportion of all DLA spend) on a commodity or with a supplier, show many characteristics of goods that the Marine Corps typically uses only in part.

⁷ Of the NSNs that the DLA purchased for use by the Marine Corps (and others), 459 were parts that are managed by manufacturer part number, which can occur if the part has been ordered only once or twice. As such, there are no FSCs associated with these goods. Because the ACF contains data on goods purchased only by DLA, there are no services (or PSCs) associated with these data.

Several DLA Federal Supply Groups with USMC Spend Have Very High Numbers of Contracts

	FSG	# ctrx	# ctr ID codes	% ctrx sole srce	\$s M	% \$s USMC	% ctrx small biz	# NSNs
1	Hardware and abrasives	12,161	1,158	34	17	3	84	12,634
2	Electrical & electronic equipment components	7,257	1,026	50	33	5	75	5,155
3	Medical, dental, & veterinary equipment & supplies	5,890	350	57	31	1	60	1,635
4	Pipe, tubing, hose, & fittings	4,769	572	33	9	4	79	4,080
5	Vehicular equipment components	4,223	622	41	34	7	77	3,020
6	Instruments and lab equipment	2,761	452	59	6	3	51	1,033
7	Electric wire, & power & distribution equipment	2,164	464	46	25	7	76	1,230
8	Engine accessories	1,682	357	53	8	3	75	1,314
9	Mechanical power transmission equipment	1,263	394	50	6	3	70	1,017
10	Weapons	1,112	331	32	11	11	74	703
	Other	11,561	2,225	43	324	5	75	11,121
	Total	54,241	4,456	43	505	4	75	42,942

SOURCE: FY04 Active Contract File, Marine Corps.

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53

To present the broadest overview of DLA goods for which the Marine Corps may wish to partner with other customers in seeking PSM improvements, we first consider the FSGs in which DLA purchases such goods. Here we rank the FSGs in which DLA provides goods used at least in part by the Marine Corps by the total number of ACF contracts for them.⁸ The columns in the chart represent

- # ctrx: the number of contracts for goods requisitioned by the Marine Corps
- # ctr ID codes: the number of different contractor ID codes for these contracts
- % ctrx sole srce: the percentage of contracts shown that are coded sole or single source
- \$s M: the estimated amount DLA spent for goods used by the Marine Corps
- % \$s USMC: the USMC percentage of total money spent on a total category that was for goods used at least in part by the Marine Corps (e.g., the top line indicates that the estimated \$17 million spent on goods used by the Marine Corps was 3 percent of the total that DLA spent on these goods)
- % ctrx small biz: the percentage of contracts that are with small businesses

⁸ This table and subsequent tables on DLA spend are limited to ACF data and, as noted, for NSNs used at least in part by the Marine Corps. The table above, for example, indicates that DLA procured 12,634 NSNs in hardware and abrasives used at least in part by the Marine Corps. For these NSNs, DLA used 12,161 contracts, 34 percent of which were sole source and 84 percent of which were with small businesses. The USMC proportion of the ACF spend for these NSNs was \$17 million, which was 3 percent of all money DLA spent through these contracts for these NSNs.

- # NSNs: the total number of NSNs for items used at least in part by the Marine Corps in each FSG.

As noted earlier, large numbers of contracts for similar goods might indicate opportunities for contract consolidation. Above we see broad categories of goods with thousands of contracts for hundreds of suppliers providing thousands of NSNs. In none of the categories listed does DLA spend more than \$34 million for the Marine Corps. In four it spends less than \$10 million.

A great many contracts shown above—up to 59 percent in instruments and lab equipment—are sole source. Having a single qualified source or no competition can, as noted earlier, limit opportunities for PSM improvements. Nevertheless, as also noted, there are some initiatives DLA may be able to pursue with suppliers of these goods, especially if they supply other goods as well.

Most contracts shown above, and 75 percent of all ACF contracts DLA has for goods used at least in part by the Marine Corps, are with small businesses. Larger, longer-term contracts reducing the total number of contracts and their associated administrative costs could perhaps be awarded to the best-performing small businesses. Given that, for each category, there are at least three times as many contracts as contractor ID codes, it appears that some consolidation of contracts by supplier may be possible.

For all these categories, the USMC share of DLA spend is small. In most listed, it accounts for less than 5 percent. In other words, other services very likely use more of the goods that DLA also purchases for the Marine Corps. Such data clearly indicate that the Marine Corps should work with other services in seeking PSM initiatives for these commodities.

There Are Varying Levels of Automation and DVD by DLA for Federal Supply Groups with Many Contracts

	FSG	# ctrx	% ctrx auto/ DVD	# actions	% act's auto/ DVD	\$s M	% \$s auto/ DVD
1	Hardware and abrasives	12,161	36/14	83,966	86/76	17	43/10
2	Electrical & electronic equipment components	7,257	52/16	43,563	80/65	33	27/5
3	Medical, dental, & veterinary equipment & supplies	5,890	2/97	74,688	73/99	31	75/94
4	Pipe, tubing, hose, & fittings	4,769	69/15	31,544	89/72	9	60/6
5	Vehicular equipment components	4,223	52/12	93,009	94/90	34	30/11
6	Instruments and lab equipment	2,761	16/63	7,818	29/67	6	18/29
7	Electric wire, & power & distribution equipment	2,164	41/38	52,695	93/94	25	32/29
8	Engine accessories	1,682	58/14	50,833	96/93	8	52/13
9	Mechanical power transmission equipment	1,263	56/18	30,003	96/93	6	46/15
10	Weapons	1,112	40/7	2,694	33/4	11	18/3
	Other	11,561	39/27	411,561	96/93	324	73/40
	Total	54,241	39/29	882,374	91/89	505	61/36

SOURCE: FY04 Active Contract File, Marine Corps.

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54

As noted earlier, large numbers of contracts can lead to greater administrative expenses to purchase goods. Some of these costs may be mitigated by automation of purchases, but some of these savings may be mitigated as well by steps such as those involved in shipping and receiving that are not automated.

Above we show measures of automation for the FSGs ranked by the number of contracts in which DLA purchases items used at least in part by the Marine Corps. In addition to those showing the number of contracts (# ctrx) and estimated dollars (\$s M) for goods used by the Marine Corps, the columns in the chart represent

- % ctrx auto/DVD: the percentage of these contracts that are coded as automated (i.e., that have at least some automated processes) and that ship goods DVD
- # actions: the number of actions on these contracts for goods used at least in part by the Marine Corps
- % act's auto/DVD: the percentage of actions for goods used at least in part by the Marine Corps that are automated and that ship goods DVD
- % \$s auto/DVD: the value of purchases for goods used by the Marine Corps that are handled by automated contracts and shipped DVD.

For four of the ten categories above, less than half of the contracts are automated. Across all DLA, 39 percent of ACF contracts for goods used by the Marine Corps are automated. A

large proportion of individual contract actions listed above are automated, but for two categories listed above, instruments and laboratory equipment (29 percent of actions automated) and weapons (33 percent of actions automated), most are not. Both of these categories have a relatively low number of actions associated with them. This suggests there may be a large number of nonautomated contracts with relatively few actions on them. Whether these contracts can be consolidated may be worth investigating. The large ratio of contracts to contractor ID codes for these categories as indicated on the previous chart also suggests a possible need for consolidating multiple, nonautomated contracts for them.

For nearly all the categories listed above, the proportion of dollars that are spent through automated contracts is substantially lower than the proportion of total contracts and actions that are automated. This suggests that low-value items most amenable to being automated have been so.

For medical, dental, and veterinary equipment and supplies used at least in part by the Marine Corps, DLA has a high proportion of spend (75 percent) and actions (73 percent) that have been automated, but a very low proportion of contracts (2 percent) that have been automated. In other words, DLA has consolidated most of its spend for these goods on a low number of automated contracts, reflecting best PSM practices.

A large proportion of DLA contracts for USMC goods use DVD. Of all goods DLA purchased for use at least in part by the Marine Corps, 29 percent were on contracts and 89 percent were on actions using DVD, representing 36 percent of dollars DLA spent through the ACF for the Marine Corps.

Virtually all contracts, actions, and dollars for medical, dental, and veterinary equipment and suppliers used at least in part by the Marine Corps used DVD. Like that for bench-stock items, DVD can conceivably speed response time for medical needs and reduce inventory costs. For these reasons, commercial practice has long used DVD for shipping medical supplies to ultimate users. Nevertheless, the large proportion of contracts for these items with small businesses may lead to still higher shipping costs unless shipments are consolidated. While such purchases can help meet federal policy goals, small businesses likely lack the leverage large suppliers would have with shipping companies. DVD may exacerbate this problem.

DLA Spending for the Marine Corps Appears to Be Concentrated in a Few Broad Categories

	FSG	\$s M	% \$s USMC	# ctr ID codes	% \$s sole srce	# ctrx	% \$s small biz	# NSNs
1	Clothing, individual equipment & insignia	102	6	189	<1	585	45	2,686
2	Manufacturer part numbers ^a	96	5	161	—	301	34	459
3	Vehicular equipment components	34	7	622	52	4,223	44	3,020
4	Electrical & electronic equip comp	33	5	1,026	45	7,257	45	5,155
5	Medical, dental, & veterinary equipment & supplies	31	1	350	17	5,890	30	1,635
6	Electric wire, & power & distribution equipment	25	7	464	47	2,164	27	1,230
7	Textiles, leather, fur, apparel & shoe findings; tent & flag	20	12	49	0	104	25	200
8	Hardware and abrasives	17	3	1,158	42	12,161	66	12,634
9	Construction & building materials	15	10	21	72	53	9	37
10	Weapons	11	11	331	34	1,112	54	703
	Other	120	3	2,527	49	20,804	63	15,183
	Total	505	4	4,456	26	54,241	44	42,942

SOURCE: FY04 Active Contract File, Marine Corps.

NOTE: — = missing.

^a These are data that are coded in the NSN field that are part numbers and that have no corresponding FSC.

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55

DLA spending on behalf of the Marine Corps appears to be concentrated in a few broad categories. One of these is clothing, individual equipment, and insignia. Of the \$505 million that DLA spends for the Marine Corps, more than one fifth, or \$102 million, is on this FSG. The second largest category is parts for which DLA uses the manufacturer part number, rather than an NSN, for management. These two categories plus that for vehicular equipment components and electrical and electronic equipment and components account for most (52 percent) of what DLA spent on behalf of the Marine Corps. Such concentration helps set prospective targets for PSM initiatives.

Small business concerns are somewhat less prevalent among these categories of goods than they are in other broad categories of DLA spend for the Marine Corps. For five of the categories listed above, less than 40 percent of ACF dollars are with small businesses. By contrast, more than 60 percent of ACF dollars spent by DLA for USMC goods in categories not listed above are with small businesses. Put another way, there may be less concern about the effects of contract consolidation with small businesses in these categories than there is elsewhere.

Even among those categories for which DLA spends the most money on behalf of the Marine Corps, the Marine Corps accounts for relatively little DLA spend. In none of these categories does the Marine Corps account for more than 12 percent of total DLA spend.

There Are Widely Varying Levels of Automation and DVD for FSGs with High USMC Spend

	FSG	\$s M	% auto/ DVD	# actions	% auto/ DVD	# ctrx	% auto/ DVD
1	Clothing, individual equipment & insignia	102	78/1	14,561	78/36	585	37/34
2	Manufacturer part numbers	96	98/100	205,490	100/100	301	46/100
3	Vehicular equipment components	34	30/11	93,009	94/90	4,223	52/12
4	Electrical & electronic equipment components	33	27/5	43,563	80/65	7,257	52/16
5	Medical, dental, & veterinary equipment & supplies	31	75/94	74,688	73/99	5,890	2/97
6	Electric wire, & power & distribution equipment	25	32/29	52,695	93/94	2,164	41/38
7	Textiles, leather, fur, apparel & shoe findings; tent & flag	20	22/8	619	57/68	104	10/17
8	Hardware and abrasives	17	43/10	83,966	86/76	12,161	36/14
9	Construction & building materials	15	84/36	196	68/36	53	38/19
10	Weapons	11	18/3	2,694	33/4	1,112	40/7
	Other	120	49/26	310,893	92/89	20,804	45/26
	Total	505	61/36	882,374	91/89	54,241	39/29

SOURCE: FY04 Active Contract File, Marine Corps.

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56

There are widely varying levels of automation and DVD for contracts, actions, and expenditures in the categories of goods shown above. Automation by dollars in these categories ranges from 18 to 98 percent. The proportion of actions that were automated was higher but still ranged widely, from 33 to 100 percent. The proportion of contracts in the above groups that is automated was somewhat lower but ranged from 2 to 52 percent.

In four categories listed above, at least 75 percent of dollars were spent through automated contracts. Two of these, manufacturer part numbers (205,490 actions and 301 contracts) and medical, dental, and veterinary equipment and supplies (74,688 actions and 5,890 contracts) have a very high number of actions and a relatively high number of contracts but relatively few dollars per action. This contrast would be expected for relatively low-value parts that are shipped as needed. Still, perhaps even fewer contracts could be used to purchase these commodities, particularly medical supplies. The limited information available for parts managed by manufacturer part number means only tentative recommendations can be made for them, not least because DLA may have its own good reasons for handling such parts as it does (and the relatively few contracts for these commodities may indicate spend for them is already leveraged). There are several thousand actions and several hundred contracts for clothing, individual equipment, and insignia; DLA may wish to explore whether more narrow groups of commodities within this range would be appropriate targets for some consolidation of automated contracts. The relatively few contracts and actions for construction and building materials indicate areas where DLA may have already successfully consolidated some contracts.

The proportion of goods in the categories above that are shipped DVD ranges from 1 to 100 percent of dollars, 4 to 100 percent of actions, and 7 to 100 percent of contracts. Among those groups with at least 90 percent of dollars, actions, and contracts handled through DVD are manufacturer part numbers and medical, dental, and veterinary equipment and supplies. Again, this circumstance is consistent for goods that may be best shipped directly to the user as needed.

Six FSGs Rank Highly in Both Contracts and Spend

FSG	Rank in . . .	
	Ctrx	\$s
Hardware and abrasives	1	8
Electrical and electronic equipment components	2	4
Medical, dental, and veterinary equipment and supplies	3	5
Vehicular equipment components	5	3
Electric wire, and power and distribution equipment	7	6
Weapons	10	10

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57

Six of the FSGs listed in the previous tables rank highly by total number of contracts and by total spend. In addition to having a high number of dollars and contracts associated with them, these goods also had hundreds of contractor ID codes associated with them, but also far more contracts than contractor ID codes.

The proportion of contracts for these goods that are sole source range from 32 to 57 percent, while the proportion of dollars that are spent on sole-source contracts range from 17 to 52 percent. Therefore, some consolidation of sole-source contracts may be possible within individual categories of these groupings. Some aggregation of competitive requirements for similar goods may be worth exploring as well for economies of scale or scope. Again, however, such opportunities would best be identified through analysis of more refined levels of grouping. We turn next to analysis of individual (four-digit) FSCs.

Four Hardware FSCs Among the Top Ten in Contracts

	FSC	# ctrx	# ctr ID codes	% ctrx sole srce	\$s M	% \$s USMC	% ctrx small biz	# NSNs
1	Medical & surgical instruments, equipment & supplies	2,789	159	63	12	4	64	548
2	Miscellaneous hardware	2,655	564	32	6	5	86	2,237
3	Fittings and specialties, hose, pipe, tube	2,553	409	30	4	4	81	2,198
4	Packing and gasket materials	1,924	322	53	3	3	78	2,068
5	Nuts and washers	1,611	313	34	1	2	85	1,740
6	Screws	1,526	247	20	1	2	87	1,644
7	Hose and tubing, flexible	1,470	250	35	4	6	70	1,245
8	Connectors, electrical	1,194	261	36	3	4	69	1,066
9	Vehicular furniture and accessories	1,132	293	29	7	6	79	770
10	Hospital furniture, equipment, utensils & supplies	1,074	76	41	2	14	72	141
	Other	36,702	3,880	46	366	4	73	28,826
	Total	54,001	4,393	44	409	4	75	42,483

SOURCE: FY04 Active Contract File, Marine Corps.

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58

A spend analysis that “drills down” from broad categories to more specific purchases can help refine and identify additional prospective targets for PSM initiatives. As shown earlier, DLA had more contracts for hardware and abrasives than for any other FSG in which it purchased goods for the Marine Corps. Here we use the ACF to drill down from FSGs to FSCs. We find several individual hardware FSCs prominent within the FSCs with the most contracts.⁹

Of the ten FSCs above in which DLA purchases goods used at least in part by the Marine Corps, we see that four of them—miscellaneous hardware, packing and gasket materials, nuts and washers, and screws—are in the broad category of hardware and abrasives. These four FSCs appear to account for most DLA contracts for hardware and abrasives used by the

⁹ We exclude from our four-digit FSC analyses of DLA contracts in the ACF those that were exclusively for manufacturer part numbers. Such purchases, if considered to be their own four-digit FSC rather than just a two-digit FSG, would constitute, by far, the FSC in which DLA spent the most ACF dollars. In FY 2004, DLA spent \$96 million on manufacturer part numbers used by the Marine Corps, compared with \$56 million it spent on special purpose clothing—the FSC on which it spent the most money for the Marine Corps—and \$12 million for medical and surgical instruments, equipment, and supplies—the four-digit FSC on which it had the most contracts for the Marine Corps. Given this distortion, the limited knowledge we have of these parts, and presentation of data for them on the FSG tables above, we chose to exclude them here. Readers will notice the totals given on the FSC tables are for ACF purchases by DLA that exclude these items. The table above, for example, shows DLA spending \$409 million, rather than \$505 million (\$96 million for miscellaneous part numbers plus \$409 million for other FSGs), for the Marine Corps.

Marine Corps. All of them have hundreds of suppliers with hundreds or thousands of contracts producing hundreds or thousands of NSNs.

At least three in four contracts in each of the four hardware categories listed above are with small businesses. In all of the hardware categories, the number of contracts far exceeds the number of contract ID codes, and in one of them the number of contracts even exceeds the number of NSNs. The proportion of contracts that are with small businesses also exceeds the proportion of sole-source contracts. These points suggest that some consolidation may be possible that would not affect small business participation in the market.

Eight of the ten categories above—all except medical and surgical instruments, equipment, and supplies; and hospital furniture, equipment, utensils, and supplies—are also among the ten FSCs in which DLA holds the highest number of competitive contracts for the Marine Corps. We later review the bargaining leverage DLA may have in seeking performance from suppliers with many competitive contracts.

Another FSG that we saw earlier with a great number of contracts was medical, dental, and veterinary equipment and supplies. Here we see two FSCs that appear to account for most contracts in this broad category: medical and surgical instruments, equipment, and supplies; and hospital furniture, equipment, utensils, and supplies. The USMC may wish to begin here with efforts to improve PSM within the broader FSG.

Both categories deserve special attention from the Marine Corps for other reasons as well. The FSC of medical and surgical instruments, equipment, and supplies is among the top ten FSCs ranked by dollars that DLA spends for goods ultimately used at least in part by the Marine Corps. The Marine Corps accounts for 14 percent of all dollars DLA spent on hospital furniture, equipment, utensils, and supplies—a far higher proportion than it accounts for other goods purchased by DLA. The Army is leading a DoD-wide commodity council for medical health care services (DoD, 2006). This effort may provide some broad lessons for DLA purchases of medical goods.

A third FSG with a high number of contracts is pipe, tubing, hose, and fittings. Here we see two FSCs that appear to account for a large majority of contracts within it: fittings and specialties, hose, pipe, and tube; and hose and tubing, flexible. Efforts to improve purchasing and supply management within this FSG may best focus first on these two FSCs and possible contract consolidation efforts within or across them. Both have very high small business participation, but they also have more than five times as many contracts as contractor ID codes. These details suggest that many small businesses supplying these goods to DLA have multiple contracts that perhaps could be consolidated without affecting their participation.

The remaining FSCs listed above—electrical connectors and vehicular furniture and accessories—are also subsets of FSGs we reviewed earlier. Electrical connectors are on one of every six contracts for electrical and electronic equipment and components used at least in part by the Marine Corps. Vehicular furniture and accessories are on one of every four contracts for vehicular equipment components used at least in part by the Marine Corps. Therefore, these FSGs—along with others that do not have individual FSCs with the most contracts—may have more dispersed spend, making them more challenging targets for PSM initiatives of interest to the Marine Corps. Still, these FSCs appear to offer some opportunity for improved practices. Both have about four times as many contracts as contractor ID codes and relatively few

sole-source contracts. Given that the USMC proportion of DLA spend for these commodities is low, the Marine Corps will want to partner with other DLA customers to explore what PSM initiatives may be possible for these goods.

There Are Similar Automation and DVD Practices for Similar Commodities (e.g., Hardware)

	FSC	# ctrx	% auto/ DVD	# actions	% auto/ DVD	\$s M	% auto/ DVD
1	Medical & surgical instruments, equipment & supplies	2,789	2/97	10,493	32/98	12	76/96
2	Miscellaneous hardware	2,655	42/13	21,628	90/83	6	47/7
3	Fittings and specialties, hose, pipe, tube	2,553	73/13	15,667	89/70	4	65/6
4	Packing and gasket materials	1,924	39/16	14,820	88/79	3	51/15
5	Nuts and washers	1,611	25/16	12,358	86/80	1	50/7
6	Screws	1,526	28/15	6,787	78/65	1	46/9
7	Hose and tubing, flexible	1,470	64/18	10,633	89/73	4	54/6
8	Connectors, electrical	1,194	61/13	4,765	72/35	3	27/5
9	Vehicular furniture and accessories	1,132	49/11	47,241	97/95	7	33/15
10	Hospital furniture, equipment, utensils & supplies	1,074	1/99	2,702	5/99	2	25/89
	Other	36,702	40/27	529,790	89/87	366	53/18
	Total	54,001	39/28	676,884	88/86	409	53/20

SOURCE: FY04 Active Contract File, Marine Corps.

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59

Earlier we saw widely varying levels of automation and DVD among FSGs with high numbers of DLA contracts for goods used by the Marine Corps. The above table shows wide variation in automation and DVD by more specific FSCs but also some similarity among broad groupings.

Overall, the above table shows automation varies from 1 to 73 percent of contracts, 5 to 97 percent of actions, and 27 to 76 percent of dollars. Yet, within the four hardware categories—miscellaneous hardware, packing and gasket materials, nuts and washers, and screws—automation varies only from 25 to 42 percent of contracts, from 78 to 90 percent of actions, and from 46 to 51 percent of dollars. This pattern suggests that, within the broad category of hardware and abrasives, DLA uses similar purchasing practices. Likewise, there are similar levels of automation for the FSCs above within the FSG for pipe, tubing, hose, and fittings, and similar levels of automation of contracts (but not actions or dollars) for the FSCs within the FSG for medical, dental, and veterinary equipment and supplies.

For nearly all the above categories, the proportion of contracts and the aggregate value of goods shipped DVD are lower than the proportion of actions that are shipped DVD. This usage of DVD suggests that there are a great many commodities of relatively low value shipped from hundreds or thousands of suppliers to each separate location using these commodities. For some commodities—e.g., critical medical equipment and supplies or bench-stock items needed for repairs—direct delivery from the supplier to the user may be desirable. Neverthe-

less, it may be worth exploring whether all items currently receiving DVD are equally critical, or if DVD is indeed the best delivery option for them.

The Marine Corps Accounts for More Than 10 Percent of DLA Spend on NSNs in Four FSCs

	FSC	\$s M	% \$s USMC	# ctr ID codes	% \$s sole srce	# ctrx	% \$s small biz	# NSNs
1	Clothing, special purpose	56	10	80	32	159	32	534
2	Tents and tarpaulins	19	17	15	23	32	23	82
3	Footwear, men's	16	7	17	63	42	63	750
4	Cable, cord, wire assemblies: communications equipment	12	15	195	21	864	21	640
5	Miscellaneous construction materials	12	9	1	80	1	M	7
6	Medical & surgical instruments, equipment & supplies	12	4	159	19	2,789	19	548
7	Vehicular brake, steering, axle wheel components	11	9	231	37	1,004	37	687
8	Armor, personal	10	2	23	39	53	39	63
9	Drugs & biologicals	9	<1	62	2	565	2	514
10	Batteries, rechargeable	9	12	83	5	461	5	115
	Other	241	4	4,111	60	48,251	60	38,543
	Total	409	4	4,393	47	54,001	47	42,483

SOURCE: FY04 Active Contract File, Marine Corps.

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60

Previously we showed that the Marine Corps accounts for low levels of DLA spend within FSGs with NSNs it uses. Therefore, it would likely want to partner with other DLA customers in PSM initiatives for these broad categories of goods.

For NSNs in more narrow categories of goods, such as those designated by FSCs, the Marine Corps accounts for somewhat higher levels of DLA spend. As a result, there may be some categories of goods for which the Marine Corps may want to have more leadership in seeking PSM initiatives by DLA. For NSNs in four categories shown in the table above, the Marine Corps accounts for at least 10 percent of DLA spend through the ACF. In one, tents and tarpaulins, it accounts for 17 percent of the spend on goods it uses.

Three FSCs above—special purpose clothing, men's footwear, and personal armor—are in the FSG for clothing, individual equipment, and insignia. Special purpose clothing tops the list of FSCs ranked by DLA spend for the Marine Corps. The \$56 million for NSNs used at least in part by the Marine Corps is more than half what DLA spends on clothing, individual equipment, and insignia NSNs used by the Marine Corps. It is also more than 10 percent of the \$505 million DLA spends through the ACF on behalf of the Marine Corps.

For special purpose clothing, DLA used 159 contracts with 80 different contractor ID codes to purchase 534 NSNs. That is, DLA had an average of two contracts per contractor for these items, indicating a possible target for contract consolidation. Among other FSCs in the broader FSG, some consolidation appears to have occurred for contracts for men's footwear, with 42 contracts covering 750 NSNs. Yet, some further consolidation may be possible, given

that there are only 17 contractor ID codes here. Similarly, personal armor has 53 contracts for only 23 different contractor ID codes and only 63 NSNs.

Two FSCs above—medical and surgical instruments, equipment, and supplies, and drugs and biologicals—are in the FSG for medical, dental, and veterinary equipment and supplies. The category medical and surgical instruments, equipment, and supplies is also among the FSCs with the highest number of contracts, having more than 17 for each contractor ID code. It also appears to be a highly competitive market, with just 19 percent of dollars spent on sole-source contracts. This market competition suggests that this category may be among the most promising prospects for initiatives to improve purchasing and supply management.

Some FSCs with High Spend Have Low DVD Rates

	FSC	\$s M	% auto/ DVD	# actions	% auto/ DVD	# ctrx	% auto/ DVD
1	Clothing, special purpose	56	87/1	2,486	64/25	159	41/21
2	Tents and tarpaulins	19	23/8	425	82/83	32	28/13
3	Footwear, men's	16	71/<1	4,283	97/18	42	64/21
4	Cable, cord, wire assemblies: communications equipment	12	8/3	9,837	83/83	864	26/31
5	Miscellaneous construction materials	12	100/44	75	100/65	1	100/100
6	Medical & surgical instruments, equipment & supplies	12	76/96	10,493	32/98	2,789	2/97
7	Vehicular brake, steering, axle wheel components	11	25/12	15,982	91/86	1,004	52/14
8	Armor, personal	10	27/2	604	11/78	53	11/40
9	Drugs & biologicals	9	97/93	53,601	93/100	565	8/97
10	Batteries, rechargeable	9	26/30	12,955	91/98	461	36/79
	Other	241	46/21	566,143	89/85	48,251	42/24
	Total	409	53/20	676,884	88/86	54,001	39/28

SOURCE: FY04 Active Contract File, Marine Corps.

RAND

61

For some FSCs on which DLA spends the most money for the Marine Corps, there are somewhat high levels of automation and somewhat low levels of DVD. For special purpose clothing NSNs, for example, 87 percent of aggregate spend, 64 percent of actions, and 41 percent of contracts are automated, but only 1 percent of aggregate spend, 25 percent of actions, and 21 percent of contracts are for goods shipped DVD. Men's footwear NSNs used at least in part by the Marine Corps, a market in which DLA spent 63 percent of ACF dollars with small business, also has relatively high levels of automation and relatively low levels of DVD. It may be worthwhile to investigate whether these items were being shipped directly to a theater of operations (e.g., Iraq), where DVD proved infeasible, or whether they were best shipped in other ways, offering other lessons for the Marine Corps and DLA.

Five of the ten FSCs above have lower proportions of contracts and aggregate spend than actions managed through automated contracts. It is likely that, for NSNs in these categories, DLA has automated purchases for less expensive items, while handling more expensive items through manual contracts. That is, it has targeted less valuable, and perhaps less critical, items for automation, as best PSM practices suggest.

Parent Firms with Many Contracts, Purchasers, or Industries May Give DLA Leverage Targets

Parent Firms w/	%	Avg# (≥2)	Max ^a	Marine Corps Concerns
Multiple contracts	69	18	1,027	Diluted buying power? Administrative personnel requirements?
Multiple purchase office codes	28	2.6	4	High transaction costs? Duplication of effort?
Multiple FSC codes	48	7	142	Contractor's core competencies? – # 1 or 2 in industry? – Investing in improvements?
Multiple NIINs	70	18	1,052	Same as for FSCs

SOURCE: FY04 Active Contract File, Marine Corps.

^a The maximum number of multiple contracts, multiple FSC codes, and multiple NIINs comes from Kampi Components Co. Inc., a small business.

RAND

62

Best practices for improving purchasing and supply management involve the buyer and the supplier. As noted earlier, the buyer and the supplier may confront inefficiencies if using multiple contracts, particularly if each one involves manually processing separate requirements, bids, contract writing, negotiations, and awards. Each individual contract carries transaction costs for the buyer and the supplier. Multiple contracts, if not issued off a master solicitation, reduce the buyer's power to negotiate price discounts and improvements in delivery or quality while limiting supplier economies of scale or scope as well as other opportunities to reduce supply chain costs. Analyzing purchases by supplier may suggest some consolidation opportunities, although actual consolidation would require additional information, such as leading industry practices and specific user requirements, beyond that available in the ACF.

The data above show that 69 percent of parent firms from which DLA buys goods through the ACF for use at least in part by the Marine Corps had multiple contracts in FY 2004. By contrast, as we saw earlier, only 27 percent of parent firms from which the Marine Corps directly purchases goods or services have multiple contracts. For firms having more than one contract, the average number of contracts is 18. One firm, Kampi Components Co., Inc., a small disadvantaged business, has 1,027 contracts for goods used at least in part by the Marine Corps. Purchasing through such a high number of contracts may be diluting the buying power of DLA and forcing it to pay higher prices for goods as well as higher total contract administration costs and, for suppliers, marketing costs. More generally, as noted earlier, purchasers

may find it difficult and costly to manage an unnecessarily large number of contracts with the same provider.

Having multiple purchase offices associated with the same contractor is another possible indicator of inefficiency. Among parent firms with contracts to provide DLA with goods used at least in part by the Marine Corps, 28 percent deal with more than one purchasing office. Among contractors dealing with more than one DLA purchasing office, the average number is 2.6, with several contractors dealing with all four DLA purchasing offices. When the same contractor has contracts with different offices of the same purchaser, the purchaser may incur additional costs associated with dealing with multiple buyers. Nevertheless, DLA purchasing offices are already organized around commodities handled by the inventory control points associated with each, so it is not clear what consolidation, if any, is possible across offices.

Another question arises when the same contractor sells many different goods or services. Nearly five in ten, or 48 percent, of DLA contractors providing goods to the Marine Corps in the ACF are associated with more than one FSC code. Seven in ten, or 70 percent, are associated with more than one National Item Identification Number (NIIN), a unique identifier for every item that also comprises part of an item's NSN. Among those contractors selling parts with multiple FSC codes, the average number of FSC codes in which they sell is seven. Among those selling multiple NIINs, the average number that they sell is 18. That is, these suppliers are providing goods to DLA for use at least in part by the Marine Corps in multiple industries. Kampi provided 1,052 NIINs in 142 FSCs. Whether firms providing goods in multiple industries have industry-leading experience in all of them is a valid matter for investigation.

Many suppliers providing goods in multiple FSCs may, like Kampi, be distributors rather than the original manufacturers. In some cases, it may make more sense to purchase directly from manufacturers rather than from distributors. Issues to consider in such cases are overhead costs for each, whether distributors or DoD may have greater leverage with a manufacturer, and what interest (or reluctance) manufacturers may have in dealing directly with DoD.

The Same Supplier^a with Multiple Contracts May Indicate Prospective DLA Leverage Opportunities

	Parent Company Name	# ctrx	# sole srce ctrx	\$s M	% \$s USMC	% \$ sole srce	# ctr ID cds	# NSNs
1	Kampi Components Co, Inc	1,027	607	3	6	64	1	1,052
2	Ruta Supplies, Inc	939	789	3	15	86	1	681
3	General Dynamics Corporation	897	728	8	26	72	9	650
4	Triman Industries, Inc	879	408	1	5	68	1	1,011
5	BTMC Corporation	491	288	1	6	65	1	643
6	Idexx Distribution, Inc	483	458	<1	35	95	1	5
7	JGB Enterprises, Inc	435	123	2	8	20	1	667
8	JGILS, LLC	375	275	1	5	84	1	339
9	Wheeler Bros, Inc	352	147	2	5	43	1	288
10	North American Rescue Products	339	220	1	17	34	1	22
	Other	48,025	19,444	483	4	24	4,438	39,627
	Total	54,241	23,487	505	4	26	4,456	42,942

SOURCE: FY04 Active Contract File, Marine Corps.

^a The number of suppliers is a moving target because of ongoing acquisitions, sales, and mergers.

RAND

63

Above we list firms with the largest number of DLA contracts in the ACF for goods used at least in part by the Marine Corps in FY 2004. Each of these has several hundred contracts, many or even most of which are sole source. In fact, all of the suppliers above except JGB Enterprises, Inc.; Wheeler Brothers, Inc.; and North American Rescue Products are among the firms with the largest number of sole-source contracts¹⁰ for DLA goods used at least in part by the Marine Corps. Consolidating sole- or single-source contracts may yield economies of scale or scope, reduce transaction costs, and better leverage DLA spend on behalf of its customers.

Many of these firms have more contracts than they have NSNs used at least in part by the Marine Corps. Idexx Distribution, Inc., for example, has 483 contracts—458 of which are sole source—for the five NSNs used at least in part by the Marine Corps. These contracts may contain many NSNs not used by the Marine Corps as well. Still, given that the Marine Corps accounts for 35 percent of DLA spend with Idexx through the ACF, it may wish to lead DoD efforts to explore possible PSM initiatives by DLA with this firm.

Most of these firms sell several hundred NSNs to DLA for use at least in part by the Marine Corps. As noted earlier, whether these firms have industry-leading experience in providing all these products is a valid matter for investigation.

¹⁰ Given that some of these companies are distributors, not manufacturers, they may either have sole distribution rights or are sole source as the result of a socioeconomic preference.

It is noteworthy that four of the top five companies listed above—Kampi Components Co., Inc.; Ruta Supplies, Inc.; Triman Industries, Inc.; and BTMC Corporation—are small businesses. Therefore, DLA has many opportunities to implement the federal mandate for strategic sourcing without adversely affecting efforts to meet federal policy goals for small business use. That is, DLA could group its requirements into larger contracts that would still be suitable for small businesses.

Firms with Many Contracts Automate About Half Their Business and Have Varying Levels of DVD

	Parent Company Name	# ctrx	% ctrx auto/ DVD	# actions	% actions auto/ DVD	\$s M	% auto/ DVD
1	Kampi Components Co, Inc	1,027	51/11	1,859	53/11	3	52/14
2	Ruta Supplies, Inc	939	54/19	1,457	55/15	3	48/4
3	General Dynamics Corporation	897	2/14	1,653	19/29	8	1/10
4	Triman Industries, Inc	879	44/21	1,481	44/22	1	45/14
5	BTMC Corporation	491	58/10	3,894	89/71	1	52/4
6	Idexx Distribution, Inc	483	—/99	548	—/99	<1	—/87
7	JGB Enterprises, Inc	435	49/14	1,737	69/31	2	47/5
8	JGILS, LLC	375	57/17	474	56/16	1	60/8
9	Wheeler Bros, Inc	352	46/3	887	43/5	2	34/5
10	North American Rescue Products	339	—/100	1,258	—/100	1	—/100
	Other	48,025	40/29	867,126	91/90	483	63/37
	Total	54,241	39/29	882,374	91/89	505	61/36

SOURCE: FY04 Active Contract File, Marine Corps.

NOTES: The number of firms is a moving target because of ongoing acquisitions, sales, and mergers. — = missing.

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64

Most of the leading suppliers to DLA for USMC goods have roughly comparable levels of automation. With the exception of General Dynamics, reported levels of contract automation for these firms ranged from 44 to 58 percent. Similarly, five of the eight firms above for which data are available reported contract action automation levels between 43 and 56 percent, while six of eight reported levels of automation for aggregate spend between 45 and 60 percent.

Across companies, levels of automation for contracts, actions, and aggregate spend were roughly similar. This automation can help reduce transaction costs for DLA and its customers. Nevertheless, the sheer number of contracts, the transaction processing fees associated with them, and the costs for fulfilling manual steps, such as those for shipping, may still lead DLA customers to seek a lower number of contracts for them.

Most of these firms use DVD for a relatively small portion of their contracts, actions, and aggregate dollars for goods used at least in part by the Marine Corps. This low usage of DVD suggests that their goods may not need DVD, they consolidate shipments to DLA, or their goods are shipped to theater, for which DVD is not available. North American Rescue Products ships 100 percent of its goods DVD, perhaps on an as-needed basis.

DLA and Marine Corps Leverage Opportunities May Vary by Firm

	Parent Company Name	DLA \$s M	% \$s US MC	% \$s sole srce	# ctrx	% ctrx sole srce	# NSNs	# FSC cds	# Ctr ID cds	% total sales to DLA
1	Procurennet, Inc	24	10	1	161	50	917	74	1	N/A
2	Graybar Electric Co, Inc	18	11	8	41	49	41	13	6	<1
3	Atlantic Diving Supply, Inc	16	6	0	1	100	8	1	1	N/A
4	UNICOR /Federal Prison Industries	14	9	3	111	16	437	18	9	N/A
5	Hesco Bastion Limited	12	10	88	1	100	7	1	1	N/A
6	National Center for Employment	12	25	—	2	—	48	1	1	N/A
7	Oshkosh Truck Corporation	10	14	25	174	78	610	64	2	<1
8	Belleville Shoe Manufacturing	10	17	—	8	—	407	1	1	N/A
9	Supplycore, Inc	10	9	—	5	—	8	1	1	N/A
10	Johnson Outdoors, Inc	10	24	—	3	—	5	1	1	3
	Other	368	4	31	53,738	43	41,600	359	4,432	N/A
	Total	505	4	26	54,241	43	42,942	361	4,456	N/A

SOURCE: FY04 Active Contract File, Marine Corps.

NOTES: The number of firms is a moving target because of ongoing acquisitions, sales, and mergers. — = missing. N/A = Not publicly traded nor does the firm report quarterly revenue.

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65

Here we rank the largest DLA contractors by spend in the FY 2004 ACF for goods used by the Marine Corps. In FY 2004, DLA spent for the Marine Corps more than \$10 million with six different firms (and \$10 million for the remaining firms shown above). The high number of contracts for some of these firms—such as Procurennet, UNICOR, and Oshkosh—may be a good subject for further investigation. Perhaps contract consolidation could reduce some transaction costs with these companies.

A large total volume of sales with a firm can provide some leverage over it. Unfortunately, it is difficult to discern from these data how much leverage could result from DLA's volume of purchases. Most of these firms are not publicly traded and hence do not report quarterly revenue to public bodies, such as the Securities and Exchange Commission. Nevertheless, some broader leverage may be available to DLA for some of these firms. For example, while DLA purchases for the Marine Corps constitute less than 1 percent of sales by Oshkosh Truck, data we reviewed earlier showed that the Marine Corps accounts for 20 percent of sales by Oshkosh, while DoD as a whole accounts for 45 percent of the firm's sales.

Sole-source information is also missing for many of these firms. All the firms for which sole-source data are available show a higher proportion of contracts than dollars that are sole source, in part because a contract can be coded as sole source but have both sole-source and competitive actions.

DLA May Have Many Low-Value, Nonautomated Actions with Some Firms

	Parent Company Name	DLA \$s M	% \$s auto/ DVD	# ctrx	% auto/ DVD	# actions	\$ auto/DVD
1	Procurenent, Inc	24	98/98	161	41/19	176,536	100/100
2	Graybar Electric Company, Inc	18	100/100	41	71/24	7,516	100/99
3	Atlantic Diving Supply, Inc	16	100/100	1	100/100	3,860	100/100
4	UNICOR /Federal Prison Industries	14	20/1	111	38/18	13,713	91/90
5	Hesco Bastion Limited	12	100/44	1	100/100	75	100/65
6	National Center For Employment	12	99/<1	2	50/50	98	84/8
7	Oshkosh Truck Corporation	10	82/78	174	13/57	19,793	95/95
8	Belleville Shoe Manufacturing	10	100/0	8	63/63	1,167	98/2
9	Supplycore, Inc	10	100/100	5	100/100	23,307	100/100
10	Johnson Outdoors, Inc	10	—/<1	3	—/33	35	—/80
	Other	368	53/27	53,738	39/29	636,274	87/86
	Total	505	61/36	54,241	39/29	882,374	91/89

SOURCE: FY04 Active Contract File, Marine Corps.

NOTES: The number of firms is a moving target because of ongoing acquisitions, sales, and mergers. — = missing.

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66

Several of these firms have levels of automation for their contracts that are well below the levels of automation for their contract actions and the aggregate spend associated with them. Therefore, DLA may have many low-value contracts of few actions each with these firms that are being managed manually. For example, virtually all DLA actions with and dollars spent through Procurenent for the Marine Corps are automated, but only 41 percent of the 161 contracts for this spend are automated.

Some of these firms also have levels of actions handled by DVD that are below the proportions of contracts and aggregate dollars handled through DVD. This pattern suggests that these suppliers may be shipping some commodities of low value through DVD. Verifying and exploring the reasons for this usage of DVD (e.g., confirming that these are critical consumable items requiring DVD or whether these DVD shipments are grouped) may be worth further investigation.

***Top DLA Suppliers with Sole-Source Contracts
Indicate Prospective Opportunities
for Corporate Contracts***

	Parent Company Name	Sole source ctrx	% ctrx sole srce	Sole srce \$\$ M	% \$\$ sole srce	Ctr IDs	# FSCs	# NSNs
1	Ruta Supplies, Inc	789	84	3	86	1	82	681
2	General Dynamics Corporation	728	81	6	72	9	74	650
3	Kampi Components Co, Inc	607	59	2	64	1	142	1,052
4	Idexx Distribution, Inc	458	95	<1	95	1	4	5
5	Triman Industries, Inc	408	46	1	68	1	124	1,011
6	BTMC Corporation	288	59	1	65	1	60	643
7	JGILS, LLC	275	73	1	84	1	90	339
8	Princeton Tec	260	86	<1	67	1	2	2
9	Debra Dilkes, DBA AJ SU	240	96	<1	27	1	2	8
10	New Era Contract Sales, Inc	234	74	1	84	1	95	330
	Other	19,200	40	<1	24	4,438	356	40,048
	Total	23,487	43	130	26	4,456	361	42,942

SOURCE: FY04 Active Contract File, Marine Corps.

RAND

67

Here we rank DLA contractors selling goods used by the Marine Corps by the number of sole-source contracts for such goods in the FY 2004 ACF. For nearly all these firms, sole-source contracts constitute most DLA contracts for USMC goods in the ACF. The top seven firms shown above are also among the firms with the most DLA contracts for USMC goods.

Sole-source contracts may afford consolidation opportunities and benefits that may be realized through such initiatives as consolidating multiple sole-source contracts into fewer contracts or even a single contract with a supplier. Sole-source contracts with a single supplier may be consolidated without any need to subject the consolidated contract to competition, although the resulting contract may be subject to more stringent processes.

Contract consolidation opportunities may also be limited by the corporate structure of suppliers. Note, for example, that General Dynamics has nine contractor ID codes, perhaps representing several autonomous business units that have sole-source contracts with DLA. All other suppliers listed above, however, have just one contractor ID code.

All these firms have more sole-source contracts than the number of FSCs in which they sell goods to DLA. Three firms—Idexx Distribution, Princeton Tec, and Debra Dilkes, DBA AJ SM—have less than ten FSCs and NSNs. One, Princeton Tec, has just two NSNs but 260 contracts for goods used at least in part by the Marine Corps. Again, these contracts may contain many other NSNs as well. Still, DLA may wish to explore consolidating contracts for such goods.

Automation and DVD Vary Little Within Firms with Many Sole-Source Contracts

	Parent Company Name	Sole source ctrx	% ctrx auto/ DVD	# actions	% actions auto/ DVD	\$s M	% \$s auto/ DVD
1	Ruta Supplies, Inc	789	54/19	1,457	55/15	3	48/4
2	General Dynamics Corporation	728	2/14	1,653	19/29	8	1/10
3	Kampi Components Co, Inc	607	51/11	1,859	53/11	3	52/14
4	Idexx Distribution, Inc	458	—/99	548	—/99	<1	—/87
5	Triman Industries, Inc	408	44/21	1,481	44/22	1	45/14
6	BTMC Corporation	288	58/10	3,894	89/71	1	52/4
7	JGILS, LLC	275	57/17	474	56/16	1	60/8
8	Princeton Tec	260	—/100	365	—/100	<1	—/100
9	Debra Dilkes, DBA AJ SU	240	—/97	277	—/95	<1	—/27
10	New Era Contract Sales, Inc	234	60/24	483	61/20	1	61/13
	Other	19,200	40/29	869,883	91/90	487	62/36
	Total	23,487	39/29	882,374	91/89	505	61/36

SOURCE: FY04 Active Contract File, Marine Corps.
NOTE: — = missing.

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68

In this chart, we show automation and DVD for firms with a high number of sole-source contracts. The proportion of contracts, actions, and dollars shown as automated are for all sales to DLA of goods used by the Marine Corps, not just sole-source sales.

Within each firm, the proportion of contracts, contract actions, and aggregate dollars from DLA for USMC goods that are automated is roughly equal. One exception is BTMC Corporation, which has a higher proportion of actions than contracts or aggregate dollars that are automated, suggesting its higher-priced USMC-related goods are handled through manual contracts.

Similarly, BTMC has a far higher proportion of its actions than contracts or aggregate dollars for goods used by the Marine Corps that are shipped DVD. This situation suggests that BTMC ships many goods of lesser value DVD. It may be worth confirming this point, as well as whether the shipments are for critical parts or, even if received separately, are shipped together directly to the user.

Many of the goods represented above, even those that are sole source, are likely to be of relatively low value. Note that most of the firms listed above have only about \$1 million in USMC sales to DLA but that hundreds or, in the case of BTMC, thousands of actions are used to fulfill these sales.

Top DLA FSCs by Competitive Contracts Suggest Opportunities to Group Requirements

	FSC	# comp ctrx	% comp ctrx	Comp \$s M	% comp \$s	Comp ctr IDs	# NSNs
1	Miscellaneous hardware	1,844	70	4	61	564	2,237
2	Fittings and specialties; hose, pipe, tube	1,780	70	2	48	409	2,198
3	Screws	1,230	81	1	82	247	1,644
4	Nuts and washers	1,088	68	1	65	313	1,740
5	Hose and tubing, flexible	945	64	3	80	250	1,245
6	Packing and gasket materials	942	49	1	47	322	2,068
7	Vehicular furniture and accessories	797	70	4	51	293	770
8	Connectors, electrical	743	62	2	62	261	1,066
9	Nails, keys, and pins	709	75	1	65	234	905
10	Rings, shims, and spacers	571	61	<1	51	283	798
	Others	18,331	47	146	39	3,931	27,812
	Total	28,658	53	164	40	4,393	42,483

SOURCE: FY04 Active Contract File, Marine Corps.

RAND

69

The leverage DLA or other customers have over a supplier will vary by how competitive the market is for a good. Here we show the FSCs in which DLA purchases goods used by the Marine Corps ranked by the number of competitive contract listed in the ACF for each. Columns for each category indicate

- # comp ctrx: the number of contracts that are competitive (i.e., for goods for which there are more than one source)
- % comp ctrx: competitive contracts as a percentage of all contracts
- Comp \$s M: the millions of dollars spent through competitive contracts
- % comp \$s: the money spent through competitive contracts as a percentage of money spent for all contracts
- Comp ctr IDs: the number of contractor IDs on competitive contracts
- # NSNs: the total number of NSNs used at least in part by the Marine Corps within the FSC (both competitive and noncompetitive).

In FY 2004, DLA had more than 1,000 competitive contracts for four FSCs and more than 700 for five more. The top eight FSCs listed above are also on the list shown earlier of those with the highest number of contracts.

Contracts for competitive goods cannot legally be consolidated with a supplier as those for sole-source goods may. Still, there may be opportunities for consolidating requirements

within many of these groups. All these FSCs have far more competitive contracts than contractor ID codes associated with them. Consolidation opportunities may also be realized across groups of related commodities, such as miscellaneous hardware; screws; nuts and washers; packing and gasket materials; and nails, keys, and pins—all of which are part of the FSG for hardware and abrasives.

Finally, most dollars spent with eight of the ten categories above are spent on competitive contracts. In other words, the markets for these services are, for the most part, competitive. This situation gives DLA leverage over suppliers in them to implement their own PSM initiatives so as to continue to win DLA business.

Top Ten DLA Suppliers for Clothing, Individual Equipment, and Insignia by Dollars

	Parent Company Name	DLA \$s M	% \$s USMC	% \$s sole srce	# ctrx	% ctrx sole srce	# NSNs	# FSC cds	# Ctr ID cds	% total sales to DLA
1	DHB Industries, Inc	114	1	1	11	18	40	2	1	35
2	Tennier Industries, Inc	93	2	—	5	—	37	2	1	N/A
3	UNICOR /Federal Prison Industries	90	3	—	39	—	269	6	1	N/A
4	Ceradyne, Inc	79	2	—	4	—	10	1	1	48
5	Specialty Defense Systems of Pennsylvania, Inc	78	4	2	43	35	157	4	1	N/A
6	Mine Safety Appliances Co	75	<1	99	7	86	34	3	2	9
7	Simula, Inc	68	1	—	2	—	8	1	1	N/A
8	Tennessee Apparel Corp	59	<1	—	11	—	386	3	1	N/A
9	Armorworks, Inc	59	1	—	2	—	6	1	1	N/A
10	Belleville Shoe Manufacturing	58	17	—	9	—	852	1	1	N/A
	Other	962	9	<1	913	19	7,343	15	281	N/A
	Total	1,734	6	5	1,045	19	8,374	15	281	N/A

SOURCE: FY04 Active Contract File, Marine Corps.

NOTES: The number of firms is a moving target because of ongoing acquisitions, sales, and mergers. — = missing. N/A = Not publicly traded nor does the firm report quarterly revenue.

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70

Ultimately a spend analysis seeking to improve purchasing and supply management should consider commodities and suppliers together rather than separately. We offer the following example of such an analysis on DLA goods for the Marine Corps.

Earlier we saw that clothing, individual equipment, and insignia is the FSG in which DLA spends more money than any other for the Marine Corps. Here we analyze expenditures for all DLA purchases in this category, not just those used by the Marine Corps. Clothing is an area that may soon become the focus of a USMC-led, DoD-wide commodity council (DoD, 2006). The data here can help illustrate the broad issues such an effort would need to consider.

The overall DLA spend for clothing, individual equipment, and insignia is somewhat concentrated. The top ten firms listed above account for 44 percent of the \$1.734 billion DLA spends for this FSG. Although data on competitiveness are limited—and missing for seven of the top ten firms—the indicators that do exist show a highly competitive market, with few expenditures through sole-source contracts.

Contracting practices appear to already include some consolidation, although more may be possible. A few of the top ten firms have less than five contracts, but several have more than ten each. All the suppliers listed above except one have just one contractor ID code, likely indicating corporate structures conducive to contract consolidation. In fact, seven of the ten firms listed here—all but UNICOR, Ceradyne, and Mine Safety Appliances—are small businesses,

whose structures may be even more conducive to consolidation. Altogether, we found (in analyses not shown) that 63 percent of DLA spend on these items is with small businesses.

Those with relatively few contracts appear to have relatively few NSNs. The firms listed above provide between 6 and 852 NSNs, but none provides goods in more than six FSCs. In fact, four provide goods in only one FSC.

Data on dependency by these suppliers on DLA are limited and missing for seven. Top suppliers for whom these data are available have a good deal of dependency on DLA, with one firm, Ceradyne, Inc., making 48 percent of all its sales to DLA. Sales to other services or agencies could mean that dependency of these firms on DoD is higher still. The USMC share of DLA business with these agencies varies widely, from no more than 1 percent for five of these firms to 17 percent for Belleville Shoe Manufacturing.

Most DLA Expenditures for Clothing, Individual Equipment and Insignia Are for Goods Used by the Army

	Parent Company Name	\$s M	% \$s USMC	% \$s Army	% \$s Navy	% \$s Air Force	% \$s Other	# NSNs	# actions
1	DHB Industries, Inc	114	1	56	3	15	25	40	283
2	Tennier Industries, Inc	93	2	83	2	7	7	37	70
3	UNICOR / Federal Prison Industries	90	3	43	2	5	45	269	735
4	Ceradyne, Inc	79	2	58	10	16	14	10	32
5	Specialty Defense Systems of Pennsylvania, Inc	78	4	67	1	6	20	157	437
6	Mine Safety Appliances Co	75	<1	97	<1	2	1	34	111
7	Simula, Inc	68	1	62	10	12	16	8	29
8	Tennessee Apparel Corporation	59	<1	75	5	8	12	386	827
9	Armorworks, Inc	59	1	60	14	11	15	6	30
10	Belleville Shoe Manufacturing	58	17	47	2	5	28	852	2,087
	Other	962	9	52	9	9	21	7,343	31,068
	Total	1,734	6	58	7	9	20	8,374	35,709

SOURCE: FY04 Active Contract File, Marine Corps.

NOTE: Percentages of market share will not add to 100 because of missing market share data.

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71

Most, or 58 percent, of DLA expenditures for clothing, individual equipment, and insignia are for goods ultimately used at least in part by the Army. The Army share of DLA expenditures with the top suppliers is even higher than it is with other suppliers; among those outside the top ten, 52 percent of DLA expenditures are for goods ultimately used by the Army.

The Army share of DLA purchases among suppliers listed above does vary, from 43 to 97 percent. The share of DLA purchases by other services or agencies varies widely as well. Therefore, approaches to improving purchasing and supply management with different companies will have to take into account perspectives that vary by supplier. For example, while the Army's perspective is likely to be most important for goods in this FSG from Mine Safety Appliances Co., those of the Navy and Air Force are somewhat important for purchases from Ceradyne, Inc.; Simula, Inc.; and Armorworks, Inc. And, again, as we saw earlier, the perspective of the Marine Corps is relatively important for purchases from Belleville Shoe Manufacturing.

Automation and DVD Vary for Suppliers of Clothing, Individual Equipment, and Insignia

	Parent Company Name	\$s M	% auto/ DVD	# ctrx	% auto/ DVD	# actions	% auto/ DVD
1	DHB Industries, Inc	114	1/1	11	18/27	283	2/84
2	Tennier Industries, Inc	93	79/0	5	60/20	70	79/1
3	UNICOR /Federal Prison Industries	90	64/3	39	85/8	735	88/2
4	Ceradyne, Inc	79	82/—	4	25/—	32	78/—
5	Specialty Defense Systems of Pennsylvania, Inc	78	90/2	43	14/63	437	59/29
6	Mine Safety Appliances Company	75	13/94	7	29/71	111	56/78
7	Simula, Inc	68	92/—	2	50/—	29	86/—
8	Tennessee Apparel Corporation	59	44/0	11	73/9	827	93/<1
9	Armorworks, Inc	59	84/—	2	50/—	30	97/—
10	Belleville Shoe Manufacturing	58	82/0	9	67/11	2,087	93/1
	Other	962	66/3	913	34/35	31,068	78/42
	Total	1,734	63/6	1,045	36/34	35,709	78/38

SOURCE: FY04 Active Contract File, Marine Corps.

NOTE: — = missing.

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72

The levels of automation and DVD that DLA uses in its purchases of clothing, individual equipment, and insignia vary greatly by supplier. It may be worth exploring to see how these vary by ultimate customer needs.

While 63 percent of aggregate dollars spent and 78 percent of contract actions in this broad category are automated, only 36 percent of contracts are. This finding suggests that there may be some contracts with a relatively low number of higher-value actions on them, as best purchasing and supply management practices would suggest.

By leading suppliers, the proportion of contracts that are automated ranges from 14 to 85 percent. Specialty Defense Systems of Pennsylvania, Inc., which has the highest number of contracts among leading suppliers, also has the lowest proportion of automated contracts among them. Given that 90 percent of its dollars and 59 percent of its actions are automated, many of these may have relatively few low-value actions as well. UNICOR, which has the second highest number of contracts among leading suppliers, has the highest level of contract automation. It may be worth investigating whether more Specialty Defense Systems contracts can be automated and whether more contracts for both it and UNICOR can be consolidated.

The proportion of contract actions that are automated ranges from 2 percent for DHB Industries, Inc., to 97 percent for Armorworks, Inc. Only 30 contract actions were reported for Armorworks, meaning that 29 were made through automated processes, but 283 were reported for DHB, meaning about 275 actions were processed manually. In addition, only 1 percent of DLA dollars for DHB goods were spent through automated processes, compared

to 84 percent for Armorworks and 92 percent for Simula, Inc. The precise nature of goods provided by these companies as well as the needs of ultimate customers may affect automation opportunities. Armorworks provides goods to DLA through fewer, higher-value actions than used by DHB. The Army is the leading purchaser of DLA goods from both firms, but the Air Force has a substantial proportion of DHB goods, and the Air Force and Navy have a substantial share of Armorworks goods. Other suppliers providing goods through even more actions of less value have higher levels of automation than DHB. Better understanding of user requirements for these goods will help demonstrate specific contracting needs and what might be done to improve contracting performance and reduce contracting costs.

The proportion of dollars, contracts, and actions that is handled DVD is lower than that for automated contracts. This disparity suggests that these items may be handled through consolidated shipments, although the proportion that is shipped DVD varies by firm.

Among the seven top-ten suppliers for which DVD data are available, DVD is lowest for UNICOR. UNICOR used DVD on 8 percent of its contracts, 2 percent of its actions, and 3 percent of its goods as measured by aggregate value to DLA. DVD was highest for Mine Safety Appliances Company, which used it on 71 percent of its contracts, 78 percent of actions, and 94 percent of its goods sold to DLA as measured by aggregate value. These differences may reflect the differing nature of the specific goods that each firm produces, with UNICOR producing goods that can be stockpiled but Mine Safety Appliances producing those that are best shipped directly to users as needed. Nevertheless, a complete spend analysis is needed to verify these suppositions.

Further information on more specific categories of goods within this FSG may also suggest prospective opportunities for improving purchasing and supply management within it. For example, three of the top ten suppliers listed above—Tennier Industries, UNICOR, and Tennessee Apparel Corporation—are also among the top DLA suppliers for special purpose clothing. Most UNICOR contracts within this FSG were also for special purpose clothing, while Tennessee Apparel has many sales to DLA in men's outerwear as well. Efforts to improve purchasing and supply management of this FSG may therefore focus on these four suppliers of special purpose clothing.

Lessons for the Marine Corps

Outline

Overview of spend analysis

Indicators of *prospective* Marine Corps opportunities for applying PSM practices

Insights for the Marine Corps from data it already collects

DLA spending on behalf of the Marine Corps

Lessons for the Marine Corps

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73

We conclude by reviewing the most important lessons that the Marine Corps can draw from this illustrative, high-level analysis of a major portion of its spend and of a portion of the spend of others on its behalf.

The Marine Corps May Have Smaller, Fewer Targets for PSM Initiatives Than Others in DoD

- **More funds devoted to personnel and fewer to weapons, goods, and services**
- **Most spending for USMC goods and services appears to be done by others on its behalf**
 - **\$3.3 billion in direct spending in FY 2004, but**
 - **\$4.3 billion in indirect spending**
- **The Marine Corps, more than any other service, needs cooperation to improve purchasing and supply management of its goods and services**

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74

The Marine Corps spends nearly \$8 billion in weapons, goods, and services from others. This figure obviously represents a considerable amount of money, and it is worth attention as the Marine Corps seeks to improve its performance and make the most of existing resources. Yet, it is worth noting that the opportunities the Marine Corps can expect to find in spend analyses for improving its purchasing and supply management differ from those likely to be available elsewhere in the DoD in at least two ways.

First, the Marine Corps has a higher proportion of funds devoted to personnel and fewer to weapons, goods, and services than the other military services have. Unless the operational concepts of the Marine Corps drastically change, we surmise that this will continue to be the case for the foreseeable future.

Second, most spending done for USMC weapons, goods, and services is actually done by others on its behalf. In FY 2004, the Marine Corps had \$3.3 billion for direct spending on goods and services—i.e., the portion of its budget over which it has the most control—but \$4.3 billion in indirect spending. This pattern of spending leads to perhaps the broadest implication of our research: The Marine Corps, more than any other military service, needs the cooperation of other components of DoD to improve purchasing and supply management of its goods and services. Indeed, it recognized this and developed a two-tier approach to improving its PSM, with the first tier of efforts establishing USMC-wide commodity teams on items for which the Marine Corps is best positioned to lead DoD-purchasing efforts and the second focusing on participation in commodity teams led by others within DoD (Simon, 2006).

There Are Some Prospective Targets for Improving Direct Marine Corps Purchases

- **The Marine Corps has relatively few purchasers, but, in some areas, it could be leaner still**
- **Many suppliers have multiple buyers and contracts**
- **Sole-source goods may limit leverage opportunities**
- **In many cases, contract consolidation could help the Marine Corps improve performance and reduce costs**

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75

Although the Marine Corps may have fewer targets for improving purchasing and supply management than the other services and it will need the cooperation of the other services and DLA to realize improvements, there are still some specific steps it can take—and has been taking—to improve its direct purchases. In recognition of these opportunities, the Marine Corps chartered the Strategic Purchasing Initiative (SPI) Integrated Process Team (IPT) on October 20, 2004, to conduct an end-to-end review of its acquisition practices. Its first wave of commodity teams was tasked with developing supply strategies and estimated savings by October 2005 (Simon, 2006).

With just 17 purchasing offices, the Marine Corps has a leaner buying organization than other services. Nevertheless, USMC purchasing could be leaner still, particularly for commonly or widely used goods and services. The Marine Corps has already taken some steps to develop a leaner purchasing organization, participating, for example, in a Navy-led commodity council for furniture and fixtures. In addition, it established three “quick hit” commodity teams for information technology goods and services, clothing, and office equipment, which quickly found estimated savings that met USMC targets. The Marine Corps recently launched two new commodity teams for professional services and maintenance of equipment (Simon, 2006).

Not only do many commodities have multiple purchasers and contracts, but many suppliers do as well. For suppliers of competitive commodities, the Marine Corps may wish to use

leverage available to all buyers in competitive markets to achieve purchasing and supply management improvements by buyers.

Sole-source goods and services preclude the benefits of a competitive market, but they offer others. Several suppliers have a dozen or more sole-source contracts. Sole-source contracts can be more easily consolidated than contracts for competitive goods and services, for which consolidation must not preclude small business participation. The Marine Corps may therefore wish to explore consolidating multiple sole-source contracts with the same supplier.

More generally, contract consolidation and longer-term contracts can offer the Marine Corps a means to increase its leverage for improved performance, reduce transaction costs, gain economies of scale or scope, and promote investment by suppliers. Such measures can help the Marine Corps develop a tailored supplier relationship that offers more flexibility for its needs and opportunities for joint, continuous improvement of integrated plans and processes.

Corporate contracts with leading suppliers could help reduce transaction, management, and marketing burdens and costs for buyers and suppliers. They could help reduce the number of USMC personnel needed to manage contracts, although requiring remaining personnel to perhaps have greater skills in developing and managing supplier relationships.

A commodity contract that consolidates contracts for the same or similar goods or services could also give the Marine Corps a means to improve its leverage. Depending on the particular goods or services purchased, the Marine Corps may wish to consolidate its contracts within a commodity group, at a particular site, or for a particular weapon system.

All consolidation or leveraging must be done in accordance with legal requirements for competition and socioeconomic goals. (For more on contract consolidation in the federal government, see Baldwin, Camm, and Moore, 2001; and the Code of Federal Regulations, Title 13, Part 125, "Government Contracting Programs.") While these requirements may limit the ability of the Marine Corps to consolidate certain commodities, they need not do so completely.

In particular, small business policy goals do not necessarily present a problem to improving PSM performance. Many best PSM practices are compatible with these goals. Conceivably, larger, longer-term contracts could be awarded to the best-performing small businesses. The Marine Corps has opportunities to consolidate multiple contracts with small businesses and reduce transaction costs for itself and its small business suppliers. Contracting data indicate that 22 percent of small businesses with USMC contracts have two or more contracts, with those holding multiple contracts having an average of 3.4.

The Marine Corps May Wish to Examine Some Indirect Purchases

- **Automation of DLA purchases helps reduce transaction costs, but**
 - **Some “automated” purchases still have manual steps**
 - **Multiple contracts may still have high transaction costs**
- **DVD can speed delivery to the user, but it has trade-offs with transportation costs**

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76

Although indirect purchases are difficult to estimate in total, much less analyze in detail, the ACF data we examined showed some specific areas of DLA purchases that the Marine Corps may wish to investigate further. The two most prominent of these are contract automation and DVD of purchases.

Automation of many contracts and most contract actions can contribute to best PSM practices associated with a large number of contracts. Yet, some steps in “automated” processes are not automated, and many “automated” purchases have some transaction costs. DLA contracts appear to automate lower-value goods and reserve manual attention for higher-value items that require it, as best PSM practices would recommend. Still, the Marine Corps and other DLA customers may wish to consider commodities for which the number of contracts could be reduced and the number of automated actions per contract increased.

DVD can also help performance and reduce inventory and total costs of ownership by shipping critical items to users as needed. DLA uses DVD for critical items and, as the ACF data apparently indicate, for medical supplies. DVD can be costly, however; so the trade-off between transportation and user-handling costs for a potentially large number of shipments and reductions in total costs should be examined. The customer wait time also needs to be examined to determine if other methods are as fast or faster for lower costs. In many cases, DVD may already indicate consolidated shipments. DLA also already uses methods besides DVD to ship less critical items, such as office furniture.

Current Data Offer Some Insights but More Are Needed for Complete Analysis

- **It is difficult to piece together total Marine Corps spend**
- **Existing systems contain many indicators of prospective savings, risks, and challenges**
- **A complete analysis is not possible because**
 - **Data quality varies widely**
 - **Inadequate on non-DD350 data**
 - **No central data source**
 - **Not all necessary information is in the data systems**

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77

This first-order analysis of Marine Corps DD350 purchases and DLA purchases on behalf of the Marine Corps revealed many indicators of opportunities and challenges for PSM initiatives. A complete analysis of all USMC purchases was not feasible because the availability and fidelity of data vary widely. This variability is particularly true for smaller purchases coded only on DD1057 data prior to FY 2005, for purchases made by a government purchase card, and for many purchases made by the other services and DLA on behalf of the Marine Corps. Even the data we examined have shortcomings in coverage. The DD350 data do not include all direct purchases. The ACF data cover the vast majority of DLA contracts but a smaller portion of DLA dollars. We were unable to analyze DD350 data for a significant portion of purchases made by others on behalf of the Marine Corps.

Not all information necessary for a spend analysis is in current data systems. At this time, there is no central data source for such data. Outside data—including comparative data on costs, quality, responsiveness, and other measures of performance; on the financial condition of suppliers; and on possible substitutes for the commodity or provider—are necessary to learn how to best structure supplier relationships.¹ Linking research on industries and their practices, the best suppliers and their capabilities, and the latest technologies to spend data will help improve purchasing practices. Given that the Marine Corps is smaller than other branches of the military, it is in particular need of DoD-wide spend data and analyses of these

¹ See Ellram (2002) for a list of internal and external sources of cost information.

issues to know whom to “tap” for collaboration on developing supply strategies for a given commodity.

The Marine Corps Needs a Centralized Spend Analysis Capability

- **Take a strategic, service-wide perspective**
 - Explore other DoD opportunities
 - Drill down for special user and strategy analyses
- **Develop familiarity with data and how to use them, including data strengths and weaknesses, best sources of different information**
- **Partner with users and PSM teams**
 - Additional information gathering, including internal Marine Corps and external market factors
 - Knowledgeable personnel to make judgment decisions

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78

An in-depth spend analysis has a number of requirements, including combining data sources; gathering additional data on suppliers, markets, internal military requirements, prevailing purchasing regulations, and policies that may shape or constrain purchasing options; and developing knowledgeable personnel and equipment for processing and analyzing the numbers. Such an analysis requires a strategic perspective encompassing all USMC purchasing activities and, in many cases, other DoD purchasing activities as well. Focusing too narrowly and not including as broad a range as possible in a spend analysis may reduce the prospective benefit from PSM initiatives, while too broad a focus may overlook some prospective opportunities within smaller categories.

Analysts must also consider special strategies and user needs. They must know the strengths, weaknesses, and context of their own data and be able to link external data to spend data in searching for opportunities to improve performance. Combining existing contracting and user data will be a complex and challenging task. Currently, no one organization within DoD has responsibility for all the tasks necessary for a spend analysis. To realize the greatest benefits and to ensure that different tasks are appropriately completed, the Marine Corps would do best to centralize capabilities for generating its data and analyses.

Centralizing data for spend and related supplier analyses maximizes performance across the service and is a commercial best practice. Sharing information on negative experiences with particular suppliers can help others avoid similar bad outcomes. Sharing information on excellent performance can make it easier to locate top-performing suppliers. Suppliers may

work harder if they know such efforts will affect their ability to obtain additional business. Centralizing and aggregating purchases across purchasing offices within the Marine Corps and within DLA may also lead to lower prices, higher quality, and more responsive performance as the leverage from a larger contract increases the importance of USMC business to the supplier. USMC centralization of purchasing in particular may also yield benefits from centralizing purchasing across acquisition and logistics.

Although most industry experts argue for centralization of purchasing, there can be valid requirements that cannot be met through centralized agreements. Centralization can also introduce larger problems in the event of contract failure (Steele and Court, 1996). One approach will not fit all situations. Spend data must therefore be considered carefully to include all diverse requirements of a customer and not used blindly to consolidate all contracts.

Centralizing spend data analysis can create a core team of experts within the Marine Corps familiar with existing data, their limitations, and how to get the most out of data analysis. Indeed, initial USMC efforts for spend analyses have likely begun assembling such a team. These experts can support local purchasing organizations, alerting them to prospective opportunities for consolidating requirements within legal and policy boundaries and to suppliers whose performance has been excellent or unresponsive.

A central clearinghouse for spend data and information about suppliers can improve contracting activities throughout the Marine Corps. A centralized function may also be able to better make the case for collecting different kinds of data and for developing systems to improve the functionality of data that the Marine Corps already collects. This may include linking NSNs to contracts (if they are not already), bringing together related performance and contracting information. Such a clearinghouse could help provide industry-wide information on related groups of goods and services. It could also provide critical information allowing all interactions with suppliers to start from a consistent, strategic perspective on service-wide objectives and requirements.

Rather than create an internal spend analysis capability, the Marine Corps has decided to outsource spend analyses in the short term and to leverage DoD and Department of the Navy efforts in the long term to improve data collection and system integration and to develop spend analysis capabilities.

Although organizations such as DLA and GSA were created to aggregate government and DoD purchases, our analysis suggests there may be additional opportunities for consolidating spend. We caution, however, that additional consolidation should be done carefully and intelligently. It should probably be led by the organization with the most technical knowledge, the most experience in using and purchasing goods or services being considered for consolidation, and the most leverage with or strongest relationships with suppliers. For many DLA purchases that we examined, one of the services may be best able to lead consolidation efforts and help “de-fragment” spend. Continuing analysis of spend data may identify other opportunities for savings or performance improvements. Although multiple sources of information are needed to compile all USMC purchases of weapons, goods, and services, the data we examined do offer a great deal of high-level information and are an excellent starting point for additional targeted, in-depth analyses.

Spend Analyses Help Target Opportunities That Other Practices Can Maximize

- **Spend analysis**
 - **A useful tool for targeting PSM initiatives**
 - **Many opportunities for the Marine Corps, including**
 - **Leverage spending of others**
 - **Additional intelligence needed to finalize targets**
- **Maximizing the rewards and managing the risks of Marine Corps PSM initiatives**
 - **Requires a strategic, cross-functional approach**
 - **Cannot be done using a tactical, functional approach**

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79

The benefits of a spend analysis have been proven by the many commercial firms that have used it for targeting their PSM initiatives and developing their supply strategies. An analysis of available data on USMC and DoD purchasing indicates that the Marine Corps can expect to realize many opportunities in its effort to improve its purchasing and supply management.

Although our initial spend analysis revealed a number of potential areas of opportunity, additional data, research, and intelligence are needed before targets for implementing best PSM practices can be finalized, much less a new supply strategy developed and suppliers selected. Conducting a detailed spend analysis and incorporating all required data are only the first steps toward adopting best PSM practices. The actual development of supply strategies and strategic supplier relationships must be done using a strategic, cross-functional, cross-enterprise approach. Such an approach may call for some organizational restructuring. DoD purchasing has often used a tactical, functional, local approach, without a broader view on improving overall performance and costs. Only by combining all activities related to a purchase will the best purchasing decisions be made, the cost opportunities from best practices be maximized, and the risks managed.

This research presented the first “top-down” analysis of direct USMC purchases. We found that, for most of the items it purchases, the Marine Corps is not the dominant DoD buyer and that, for most of its suppliers, the Marine Corps is not the dominant DoD customer. This factor is particularly true of goods that DLA purchases on behalf of the Marine Corps and the rest of DoD.

In some ways, the Marine Corps has already introduced best purchasing and supply management practices for many of the commodities it purchases and many of the suppliers from which it purchases. It surely has introduced more through its recent efforts.

Nevertheless, in many cases, it will have to work with other branches of DoD to best improve purchasing and supply management, particularly for situations in which it needs greater leverage with a supplier. At the same time, there are some particular commodities—e.g., wheeled trucks and truck tractors—and suppliers—e.g., Oshkosh—for which the Marine Corps should expect to exert more leadership on behalf of all of DoD. Its ongoing purchasing and supply management initiatives may provide more general lessons to DoD as well.

DD350 and ACF Data and Analysis Issues

The Marine Corps, along with the other military services and defense agencies, has long collected data on transactions equal to or greater than \$25,000 using the DoD Form 350, Individual Contract Action Report, which was stored in the DD350 Contract Action Reporting System. The Marine Corps sent these data to the DoD, which consolidated them across the services and defense agencies. The DoD Washington Headquarters Services/Statistical Information Analysis Division (WHS/SIAD) managed the Individual Contracting Action Report database that was used for the current analyses. These data and associated documentation are available in electronic form at the WHS/SIAD Web site.

Changes in DD350 Data Reporting

Starting in FY 2005, FAR 4.602(c)(1) required data collection points in each agency to collect data on all transactions over \$2,500. In FY 2007, this threshold was raised, along with the micropurchase threshold, to \$3,000, meaning the DoD now requires reporting of contract transactions exceeding \$3,000 on DD350 forms, except for a \$2,000 threshold for construction work covered by the Davis-Bacon Act and a \$2,500 threshold for service work, such as custodial, janitorial, and housekeeping services.¹ Some services had already begun doing so. The Army began reporting contract transactions valued at \$2,500 or more on DD350 forms in FY 2003, and the Marine Corps began in FY 2004.² Now, through a machine-to-machine interface, the services and defense centers directly report their DD350 individual contract actions to the Federal Procurement Data System—Next Generation (Lee, 2005).

Many of the data items in the DD350 have had their coding structure completely revised in recent years, which makes some comparisons over time difficult.

¹ Previously, DoD transactions between \$2,500 and \$25,000 were summarized and reported monthly on DD1057 but not DD350 forms. The DoD eliminated DD1057 beginning in FY 2005 and instructed the services and defense agencies to report transactions of \$2,500 or more on DD350 forms through at least the end of FY 2005 (Lee, 2005).

² We observed many transactions valued below \$25,000 in the FY 2003 and FY 2004 data for the Army and in the FY 2004 data for the Marine Corps. We did not find many transactions valued below \$25,000 in the FY 2004 data for other services and defense agencies.

Weapon System Codes

Beginning with FY 2004 data, spend analyses of sustainment purchases by weapon system cannot be conducted. In FY 2004, DoD changed the meaning of the data element B12C in the DD350 form from “weapon system” to “major acquisition program” or “automated information system.” This change makes a comparison of weapon systems in FY 2004 to weapon systems in the present and in prior years infeasible.

In FY 2003, the weapon system code is data element B12C in the DD350 form, called “Program, System, or Equipment Code.”³ The FY 2003 data contained 666 weapon system codes, grouped by service/agency and type of system (airframes, engines, missiles, etc.). About 92 percent of the contract actions and 66 percent of the dollars had no identifiable weapon system codes (named “Not Discernable or Classified”).

In FY 2004, the weapon system code in data element B12C of the DD350 form was called “Major Defense Acquisition Program (MDAP),” “Major Automated Information System (MAIS),” or “Other Program Code.”⁴ The FY 2004 DoD-wide DD350 data contains 154 MDAP/MAIS codes and associated abbreviations. About 97 percent of the contract actions and 83 percent of the dollars have no identifiable weapon system codes (named “*”).

SIC to NAICS

The North American Industry Classification System (NAICS) has replaced the U.S. Standard Industrial Classification (SIC) system. NAICS was developed jointly by the United States, Canada, and Mexico to provide new comparability in statistics about business activity across North America. The NAICS codes first appeared in DD350 data in FY 2001. The U.S. Census Bureau introduced the NAICS code in 1997 and revised it substantially in 2002. Another significant revision is planned for 2007 and will initially focus on products of service industries, then on manufacturing products. For further information, please see www.census.gov/epcd/www/naics.html.

Purchase Office Codes

Some services/agencies (e.g., the Army) have changed their purchase office codes from four to five characters to a six-character DoD Activity Address Code (DoDAAC). The DoDAAC uniquely identifies a unit, activity, or organization that has the ability to requisition and/or receive materiel.

³ For the data extract files and other forms, see Department of Defense, various years, under the respective subdirectories. For example, FY 2003 DD350 data are found in the subdirectories “Historical Data,” “2000–2005,” “DD350 Data,” and then “2003 Data.”

⁴ A list of the MDAP and MAIS codes or Program Numbers (PNOs) is available through the procurement coding manual for commodities and services reported on the DD350 form (see Department of Defense, various years).

Using the DD350 Data for Spend Analyses

The DD350 data were originally not designed for spend analyses. Accordingly, we supplemented these data with additional information. Thus, we describe some lessons learned on the caveats and limitations in using it for this purpose.

Parent Companies of Local Contractors

The DD350 data identifies individual suppliers using a Contractor Identification Number (DUNS number⁵), company name, and address. While there are many small, individual suppliers involved in defense contracting, large corporations with multiple locations and/or divisions have each location/division individually named as a separate local contractor DUNS code in the DD350 data. Aggregating the DD350 data to individual contractors rather than to parent companies would fail to reveal true spend totals with large corporations. The DD350 data also contain the DUNS code for the ultimate parent company of each contractor—i.e., the top level of the corporation—but lack any further information about that parent. The name of the parent company along with other characteristics, such as the size of the parent’s business (large versus small), must be obtained from outside sources. WHS/SAID supplied RAND with the DUNS database corresponding in time (February 2005) to the public release of the FY 2004 DD350 data. Individual company Web pages also helped us verify proper linkages.

Coding errors in the local contractor and ultimate parent company appear minimal in historical DD350 data, due in part to the post-year scrubbing performed by WHS/SAID. As DoD moves toward a machine-to-machine interface, DoD may want to refresh the ultimate parent codes of the local contractors to ensure continued consistency.

Missing Data

The data fields we used to determine sole source or competitive contracting may contain missing information (number of offers solicited, number of offers received, solicitation procedures, and the extent to which the contract was competed). Missing data are legitimate in some cases—e.g., when contracting with other government agencies—but, in many other cases, contract actions were missing data in these fields.

Contract transactions can include more than one PSC. However, the DD350 form permits only one PSC to be recorded. Standard practice is to record the PSC having most of the dollars, which can lead to slight overstatements of some PSCs and understatements of others. The extent of overstatement and understatement is unknown.

Many records contain the PSC “9999” or “miscellaneous.” This category was among the top ten PSCs by dollars. To understand the kinds of purchases included in this PSC, we analyzed data element B12D, called the “North American Industry Classification System (NAICS) code.” NAICS codes are less finely grained and less detailed than PSCs, but they are superior to the PSC “9999.”

⁵ The Dun & Bradstreet Data Universal Numbering System (DUNS) number is a unique nine-digit identification code used to reference single-business entities, while linking corporate family groups together. It is an internationally recognized common company identifier in electronic data interchange and global electronic commerce transactions.

Business Rules for DD350 Data

In analyzing the DD350 data, we developed “rules” that are described below to enable others interested in replicating our analyses. Various assumptions are required when analyzing these data, and these were the primary ones we used.

Dollars

Dollars, including deobligations, were summed across contract actions.

Contracts

The number of distinct 15-position, alphanumeric character contract numbers were counted across contract actions.

Parent Companies

Using the parent company code in the DD350 data ensured that our dollar results exactly matched the tabulations available on the Directorate for Information Operations and Reports (DIOR) Web site.

Small Businesses

We used an external data source for the type of business (small/large) of a parent company that corresponded to its lower, local contractors. We defined small business as “Small Disadvantaged Business” and “Other Small Business.” Our small business dollars did not match the DIOR tabulations for small business, because we did not apply the Small Business Administration (SBA) restrictions—e.g., exclusion of Foreign Military Sales (FMS) companies.

Sole-Source Contracts

We determined the sole-source (or competitive) status of each contract action. Thus, this approach considers a contract as sole source so long as it has at least one sole-source transaction. According to discussions with military service contracting personnel, the DD350 data element C6, “Number of offers solicited,” provides the best single estimate of the sole-source status of a contract action. We assessed other variables that correlated most closely to data element C6 to use in cases in which C6 was missing. Our analyses estimated sole-source status by checking data fields in the following sequence:

- Number of offers solicited (1 = sole source; 2 = competitive)
- Extent competed (B, D = sole source; A, C = competitive)
- Solicitation procedures (N = sole source; A, B, C = competitive)
- Number of offers received (1 = sole source; 2–999 = competitive).

If all of these variables were missing, then sole-source status was also considered missing.

Purchase Orders

Contract actions were flagged as purchase orders when the ninth character of the contract number was M, P, V, or W. Some military services have requested these types of analyses.

Set-Asides

Contract actions were flagged as set-asides when the extent competed was K.

ACF Data

Because DLA contract transactions were typically of a much lower value than those the services reported in DD350 data, we requested other data from DLA for this study. In March 2005, DLA sent RAND contract data for all transactions recorded in its ACF for the period FY 2002 to FY 2004. The ACF, which is managed by the DLA Office of Operations Research and Resource Analysis (DORRA), contains detailed contract information for consumable NSNs that DLA manages and was the best source of contract data for our analysis period. During this time period, particularly in FY 2004, DLA began reporting some of the contract transactions for selected NSNs to its BSM enterprise database. As these NSNs were reported in BSM, they were no longer reported to ACF. Thus, the ACF data we analyzed for this study contained information on most, though not all, contract transactions of consumable items.

Because many of the NSNs that DLA purchases are common to more than one military service, we needed to identify for each NSN the USMC-related portion of the purchase. Each fiscal year, DLA computes “market share factors” for each military service and “other” category for each NSN and part number in the ACF. For the Marine Corps, this is the total number of requisition quantities ordered by a USMC unit divided by the total number of worldwide requisition quantities made by all users. We requested market share data from DLA and estimated the Marine Corps’ portion of DLA spend by multiplying dollars in the ACF by the USMC’s market share factor for that fiscal year. Thus, as a result of this calculation, USMC spend constituted those transactions that had dollar values larger than zero.

USMC requisitions were identified by the first position of the DoD Address Activity Code, which is embedded in the first six positions of the requisition number. Contractors and FMS were counted as “other service.” The requisitions counted were based on open and closed requisitions from DORRA’s requisition history files. Requisitions were excluded if they were coded as cancelled or rejected (record types 3 and 7) or duplicate requisitions by NSN part number, requisition document number, and suffix code.

ACF transaction data represent individual contract lines, which typically refer to particular NSNs or part numbers. Dollars were represented by the variable “obligdol” or dollars obligated for individual contract lines.

The ACF identified companies using Commercial and Government Entity (CAGE) codes. Parent companies were identified by matching DUNS data, which contains CAGE codes, to the DLA contract data. The DUNS data contained parent DUNS and CAGE codes for various local company CAGE codes. In the event that the DUNS file did not contain a

CAGE code found in the ACF, we assigned the local company CAGE code (and local company DUNS number) as the parent CAGE and DUNS code.

We used the Acquisition Method Code (AMC) to identify dollars as competitive, sole source, or unknown. We defined competitive dollars as AMCs of 1 or 2. Sole source was defined as AMCs of 3, 4, or 5. Dollars were defined as “unknown” if the AMC was equal to 0 or missing or invalid. AMCs are the products of assessments made by engineering specialists. They are different from DD350 codes, because they are associated with the NSN, not the actual contract. DLA advised us to use AMCs for our analyses.

DLA also provided us with binary flag variables to identify its various transaction automation programs. For a summary of these programs, see Chapter Five on DLA spending.

Bibliography

- Aberdeen Group, Inc., "Spend Visibility: Maximizing Value in Strategic Sourcing, An Executive White Paper," Boston, Mass.: Aberdeen Group, Inc., August 2002.
- Atkinson, William, "What's in a Name? New CPO Title Reflects Buying's Strategic Role," *Purchasing*, June 1, 2000, pp. 45–51. As of September 1, 2006:
<http://www.purchasing.com/article/CA138753.html>
- Baldwin, Laura H., Frank Camm, and Nancy Y. Moore, *Federal Contract Bundling: A Framework for Making and Justifying Decisions for Purchased Services*, Santa Monica, Calif.: RAND Corporation, MR-1224-AF, 2001.
- Brooks, Rick, "One Throat to Choke," *Wall Street Journal*, November 21, 2005.
- Center for Advanced Purchasing Studies (CAPS), Web site. As of May 5, 2010:
<http://www.capsresearch.org/>
- Chapman, Timothy L., Jack J. Dempsey, Glenn Ramsdell, and Michael R. Reopel, "Purchasing and Supply Management: No Time for 'Lone Rangers,'" *Supply Chain Management Review*, Vol. 1, No. 4, Winter 1998, pp. 64–71.
- Chenoweth, Mary E., and Clifford A. Grammich, *The F100 Engine Purchasing and Supply Chain Management Demonstration: Findings from Air Force Spend Analyses*, Santa Monica, Calif.: RAND MG-424-AF, 2006.
- Cox, Andrew, "Understanding Buyer and Supplier Power: A Framework for Procurement and Supply Competence," *Journal of Supply Chain Management*, Vol. 37, No. 2, Spring 2001a, pp. 8–15.
- , "Managing with Power: Strategies for Improving Value Appropriation from Supply Relationships," *The Journal of Supply Chain Management*, Vol. 37, No. 2, Spring 2001b, pp. 42–47.
- Department of Defense, *Summary of Procurement Awards, October 2003 to September 2004*, March 2005. As of September 8, 2006:
http://siadapp.dmdc.osd.mil/procurement/historical_reports/statistics/FORMATSUM0412-01MAR05.pdf
- , Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Implementation of Strategic Sourcing Initiatives, Report to the Office of Management and Budget*, January 2006. As of September 9, 2006:
http://www.dod.mil/dbt/products/Strategic_Sourcing_012706.pdf
- , *Personnel & Procurement Statistics*, "Procurement Reports and Data Files for Download," various years. As of March 7, 2007:
<http://siadapp.dmdc.osd.mil/procurement/Procurement.html>
- Dine, Philip, "Pentagon Is Struggling to Reform Its Finances," *St. Louis Post-Dispatch*, March 25, 2002.
- Dobler, David W., and David N. Burt, *Purchasing and Supply Management*, New York: McGraw-Hill, 1996.
- Ellram, Lisa M., *Strategic Cost Management in the Supply Chain: A Purchasing and Supply Management Perspective*, Tempe, Ariz.: CAPS Research, August 2002.

Ellram, Lisa M., and Thomas Y. Choi, *Supply Management for Value Enhancement*, Tempe, Ariz.: Institute for Supply Management, 2000.

Flynn, Anne E., and Sam Farney, *The Supply Management Leadership Process*, Tempe, Ariz.: Institute for Supply Management, 2000.

George, Stephen, and Arnold Weimerskirch, *Total Quality Management: Strategies and Techniques Proven at Today's Most Successful Companies*, New York, N.Y.: John Wiley & Sons, Inc., 1994.

Grammich, Clifford A., Thomas R. Edison, Jr., Nancy Y. Moore, and Edward G. Keating, *Small Business and Defense Acquisitions: A Review of Policies and Current Practices*, Santa Monica, Calif.: RAND Corporation, MG-443-OSD, forthcoming.

Hahn, Chan K., Hyoo H. Kim, and Iong S. Kim, "Costs of Competition: Implications for Purchasing Strategy," *Journal of Purchasing and Materials Management*, Vol. 22, No. 3, Fall 1986, pp. 2–7.

Hannon, David, "Lockheed Martin: Negotiators Inc.," *Purchasing*, February 5, 2004. As of September 4, 2006:

<http://www.purchasing.com/article/CA378931.html>

Ivanovich, David, "Halliburton Gives Refund to Pentagon," *Houston Chronicle*, January 24, 2004.

Lee, Deirdre A., Memorandum on Transition to the Federal Procurement Data System—Next Generation, November 2004. As of September 2, 2006:

http://www.dau.mil/pubs/dam/11_12_2004/pleg-nd04.pdf

———, Memorandum on Update on Transition to Federal Procurement Data System—Next Generation (FPDS-NG), January 24, 2005. As of September 13, 2006:

<http://www.acq.osd.mil/dpap/policy/policyvault/2005-0969-DPAP.pdf>

Moore, Nancy Y., Laura H. Baldwin, Frank Camm, and Cynthia R. Cook, *Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms*, Santa Monica, Calif.: RAND Corporation, DB-334-AF, 2002. As of September 1, 2006 (Web only):

http://www.rand.org/pubs/documented_briefings/DB334/

Moore, Nancy Y., Cynthia R. Cook, Clifford A. Grammich, and Charles Lindenblatt, *Using a Spend Analysis to Help Identify Prospective Air Force Purchasing and Supply Management Initiatives: Summary of Selected Findings*, Santa Monica, Calif.: RAND DB-434-AF, 2004.

Olsen, Rasmus Friis, and Lisa M. Ellram, "A Portfolio Approach to Supplier Relationships," *Industrial Marketing Management*, Vol. 26, No. 2, March 1998, pp. 101–113.

Pande, Peter S., Robert P. Neuman, and Roland R. Cavanagh, *The Six Sigma Way: How GE, Motorola, and Other Top Companies Are Honing Their Performance*, New York, N.Y.: McGraw-Hill, 2000.

Phinney, David, "The Dark Side of Acquisition Reform," *Defense News*, April 5, 2004. As of September 1, 2006:

<http://www.defensenews.com/sgmlparse2.php?F=archive2/20040405/atpc10931898.sgml>

Rain, Lloyd, "Pareto's Principle," *Purchasing Link*, October 2004. As of September 1, 2006:

http://naeb.org/Purchasing_Link/Commentaries/2004/Oct_LR_Commentary.htm

Reardon, Elaine, and Nancy Y. Moore, *The Department of Defense and Its Use of Small Businesses: An Economic and Industry Analysis*, Santa Monica, Calif.: RAND Corporation, DB-478-OSD, 2005.

Rogers, Rick, "Marines Badly in Need of Funding, Report Says," *San Diego Union-Tribune*, August 23, 2006.

Sawchuk, Chris, "Determining How to Measure the Success of Your Strategic Sourcing Initiative to Highlight Areas for Improvement," paper presented at the Institute for International Research Strategic Sourcing Conference, Chicago, June 2002.

Securities and Exchange Commission, *SEC Filings and Forms (EDGAR)*, 2005. As of September 4, 2006:

<http://www.sec.gov/edgar.shtml>

Simon, Lee E., "Strategic Sourcing: Insights from Early Marine Corps Commodity Teams," *Defense AT&L*, Vol. 35, No. 3, May/June 2006, pp. 48–51. As of September 1, 2006:
http://www.dau.mil/pubs/dam/05_06_2006/may-june06.pdf

Small Business Administration, Office of Inspector General, *SBA Small Business Procurement Awards Are Not Always Going to Small Businesses*, Washington, D.C.: Small Business Administration, Report 5-14, February 24, 2005. As of September 5, 2006:
<http://www.sba.gov/IG/05-14.pdf>

Steele, Paul, and Brian H. Court, *Profitable Purchasing Strategies: A Manager's Guide for Improving Organizational Competitiveness Through the Skills of Purchasing*, London: McGraw-Hill, 1996.

U.S. General Services Administration, Office of Citizen Services and Communications, "Policy Acquisition from Federal Prison Industries, Inc.," Washington, D.C.: U.S. General Services Administration, Federal Acquisition Regulation 8.602—Policy, n.d. As of September 7, 2006:
http://www.arinet.gov/far/current/html/Subpart%208_6.html#wp1075770

U. S. Marine Corps, Installations and Logistics Department, *Logistics Plans, Policies, and Strategic Mobility*, 2004.

Williamson, Oliver E., *The Economic Institutions of Capitalism*, New York: Free Press, 1985.

Witte, Griff, "Ability to Track Costs in Iraq May Be Difficult, Report Says," *Washington Post*, May 9, 2005. As of September 2, 2006:
http://www.washingtonpost.com/wp-dyn/content/article/2005/05/08/AR2005050800873_pf.html

Woods, William T., Director, Acquisition and Sourcing Management, General Accounting Office, letter to Joshua B. Bolten, Director, Office of Management and Budget, December 30, 2003.